

Data Communications

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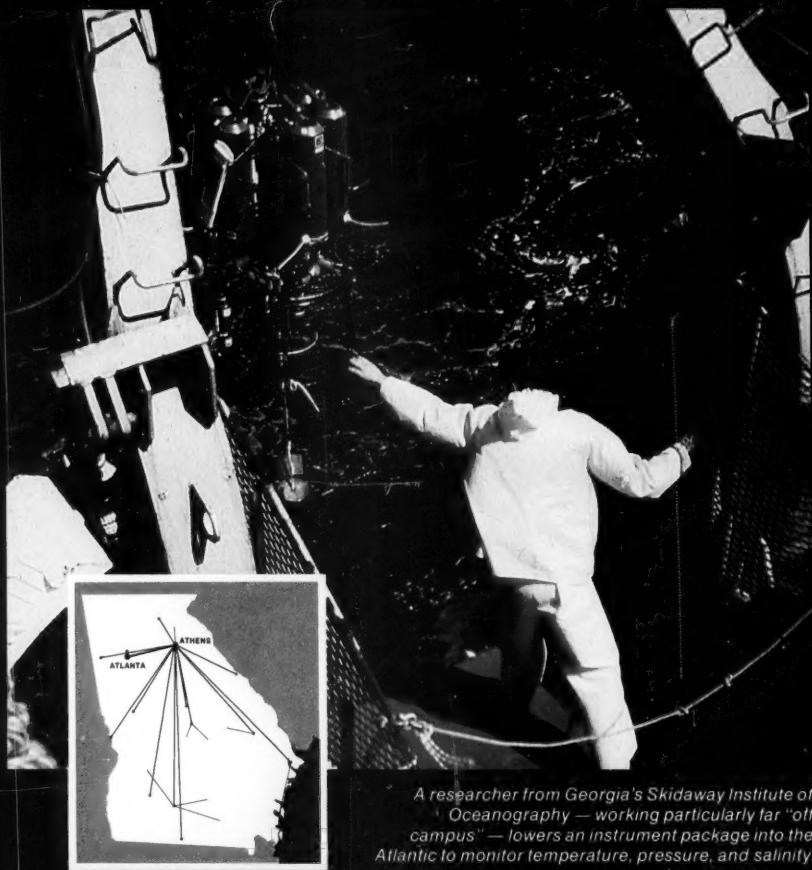
1981

BUYERS' GUIDE



McGraw-Hill's
Product and Service Locator for the
data communications professional

Georgia's USCN Network ...



A researcher from Georgia's Skidaway Institute of Oceanography — working particularly far "off campus" — lowers an instrument package into the Atlantic to monitor temperature, pressure, and salinity.

... is also a Tran Network.

Georgia's University System Computer Network was officially established in May, 1970 to provide access to major computer resources for all units of the university system. The problem then, as now, was in providing a cost effective communications path from any terminal to any computer.

Today USCN encompasses hundreds of pieces of communications equipment and over 2,500 miles of private and foreign exchange telephone lines. It links the central office, 33 campuses, experiment stations, the Skidaway Institute of Oceanography, and several other user sites throughout the state. And dial-up facilities further extend its reach.

The all-digital complex concurrently supports switched synchro-

nous and asynchronous traffic at up to 9600 bits per second statewide, plus simultaneous packet and time division switched traffic at 50,000 bits per second between its main nodes in Atlanta and Athens.

Over thirty computers are tied to the network at present, the largest of which are Control Data Cyber 70/74s, IBM 370/158s, and Univac 9080s which serve as network hosts. Remote job entry stations plus many hundreds of remote and local terminals keep the processors busy.

No census of the rapidly growing and changing mix of computers, front end communications processors, and terminals stays current long. Anticipating this, USCN designers pro-

duced a network which is easily re-configured and which can quickly grow to accommodate new users and applications. In these respects too, USCN continues to be a happy success, confirming the original design philosophy.

Tran has installed several such networks for university systems, and many more for sophisticated users in private industry, financial institutions, government agencies, telephone operating companies, and others both in the United States and in other nations. As a result, Tran now has more international experience in the construction of digital data networks than any other communications company in the world.

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Data Communications

BUYERS' GUIDE 1981

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How to use the Data Communications Buyers' Guide

The Buyers' Guide is organized into three basic sections, each planned to serve your specific needs:

1. Products and Services Directory p. 7

Products associated with data communications are divided into 9 general sections. For each section, there is a dissertation on the state of the art of the technology followed by the names of companies that supply each of the products in that section. Boldface listings are keyed to advertisements which offer additional information on products and services. (See product index on page 8)

2. Update Service p. 201

Special self-addressed, postage paid cards are available in this section so the reader, all year long, may request additional information regarding a product from any of the participating companies. Readers may also request to be put on a mailing list for future development of any product from the participating companies.

3. Vendor Directory p. 301

This directory contains an alphabetical listing of known suppliers for equipment and services in the data communications market. Information on each company includes company name, address, telephone number; name of person to contact; products manufactured or services offered; sales offices plus page references to advertisements which offer additional information on products and services.

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Facsimile-service carriers
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Satellite carriers
Specialized carriers
Telephone companies
Value-added carriers

Communications Carriers

Most data communications networks now use AT&T's phone lines to haul their bits. But there are alternatives. Unlike AT&T's facilities, value-added networks (VANs) typically charge by traffic volume instead of distance traversed. Whether a network has a single link or a thousand, the user should explore the VAN option.

There are two basic approaches to implementing a data communications network. The first is to design a network using leased and/or switched lines offered by common carriers. This means the user is responsible for interfacing his equipment to the carrier's lines, checking for transmission errors, and designing software to support the communications. Yet without an extensive knowledge of communications technology, setting up such a network is a formidable task.

The alternative is to select one of the commercial communications networks, which consist of privately owned or leased public facilities that use either terrestrial or satellite transmission technologies. However, choosing the appropriate commercial network for a

business is also a complicated undertaking.

This article compares two commercial VAN services: Tymnet and GTE Telenet. The selection of these services is not an endorsement; rather, these networks represent the current technological options. Specifically, GTE Telenet and Tymnet apply different philosophies in their packet-switching networks.

Three prime factors to be considered in choosing a network carrier are the technology, the geographic scope, and the cost. If, for example, a customer is a significant distance from a service's access point, it may be very expensive to develop a communications path to enter the network. In addition, carriers offer different services between particular cities. For example, GTE Telenet supports a maximum transmission speed of 9.6 kbit/s only in certain locations.

VANs are typically configured around a series of geographically separated nodes, or computers, which control data transmission between a user's terminals and host computer and often regulate the network

operation as well. The terminals and host computer are connected to the nodes through switched or leased lines that are usually not supplied by the VANs.

As the name implies, VANs provide enhancements to the basic services offered by the common carriers. These can include converting data from one character set to another, adjusting transmission speeds for maximum data flow without compromising the data's integrity, permitting a network device to talk to any other device on that network, routing data along the most efficient path, and reducing transmission costs by multiplexing data from multiple sources onto fewer telephone lines. The VANs generally claim an error rate of approximately 1 in 10⁸ bits. Services vary and include packet switching, message switching, and electronic mail capabilities. The cost of using value-added networks is volume-sensitive, whereas common carriers' tariffs are distance-sensitive.

Tymnet services

Tymnet uses store-and-forward message switching. Tymnet nodes accept information from several terminals (not necessarily from the same customer), separate the data by destination, and then multiplex it into full packets. When the packet is full, it is sent to its destination along a preselected path. The receiving node then disassembles the packet and sends the

reconstructed information to the user's addressed destination device. A single packet, therefore, can contain characters from several terminals. From the user's viewpoint, messages are sent without regard to packet efficiency. The figure compares the Tymnet and GTE Telenet packet-switching philosophies.

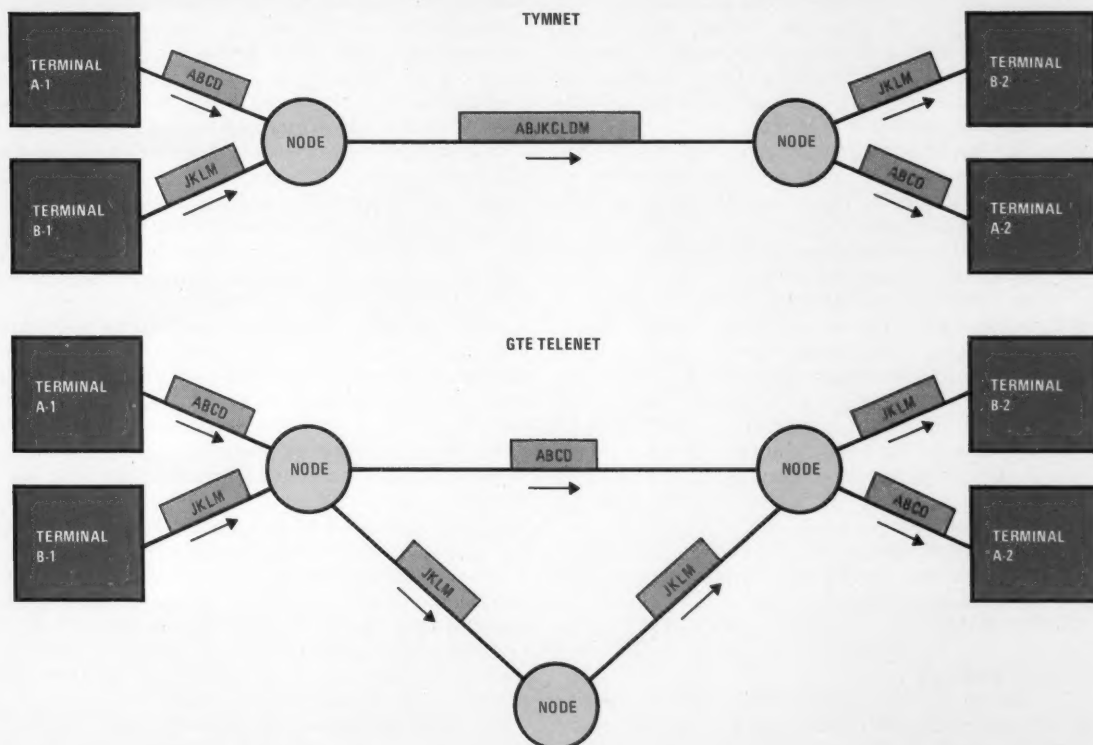
Each packet transmitted over the Tymnet network contains a checksum, a binary sequence used for error detection. When an error is found, the data packets are retransmitted automatically. If traffic is congested on any preselected path, the Tymnet nodes initiate alternate routing and reestablish connections.

The Tymnet service is based on what is called advanced communications technology (ACT), which combines multiprogramming and memory protection. ACT uses two communications tools: the Tymnet Engine, a minicomputer that drives the network nodes, and its software operating system, called the Internationally Switched Interface System (ISIS).

The Tymnet Engine, based on a 32-bit microprocessor-complemented minicomputer, accommodates up to 32 high-speed synchronous I/O channels (operating at up to 56 kbit/s) or up to 256 medium-speed asynchronous channels.

The operating system, ISIS, allows the interconnection of dissimilar terminal devices and adjusts to different protocols automatically. ISIS supports asynchro-

Varying packet-switching philosophies



nous and synchronous interfaces, as well as the IBM 3270, X.25, X.75, X.27, X.28, HDLC, SDLC, and ADCCP protocols.

Users can access the Tymnet network over dial-up or private lines. Terminals are connected to terminal interface processors, called Tysats, which match transmission speeds and perform code conversions automatically. A host computer is connected to the network in asynchronous or synchronous mode. The host interface, called Tymcom, is a software module located in the host-end network node. If the connection is synchronous, each Tymcom emulates a bisynchronous cluster controller. Up to four host computers accommodating as many as 256 simultaneous users can be configured with a synchronous Tymcom.

In addition to the network-based services, Tymnet also provides OnTyme, a store-and-forward message-switching service. OnTyme subscribers can create a message, edit it, then send it within a geographically dispersed corporate network or to other Tymnet subscribers. The message, which is held in Tymnet system files, can subsequently be either recalled or stored indefinitely. System files may also hold a user's distribution list, which a user can reference to send a message to multiple accounts. In addition, messages can be retrieved on demand or automatically on a predefined schedule. OnTyme customers can check for and retrieve lost messages, and they receive detailed reports of messages sent and received by each user. Every message is assigned a sequence number and stamped with the transmission time and date.

Tymnet nodes, which contain Tysat, Tymcom, and OnTyme software, are intelligent processors based on general-purpose minicomputers. Both Tysats and Tymcoms, in addition to their respective functions as terminal and computer interfaces, provide an error-detection/retransmission capability that ensures essentially error-free data transmissions over the network. They detect errors by using the checksum, which is appended to each data packet. Timeshare Inc. claims that Tymnet has an error rate of one undetected error in 40 billion bits of data (4×10^{10}).

Either nationwide or international access to Tymnet is possible. Users may access a high-density city, a low-density city, a city served by a foreign exchange service, or a city served by WATS facilities. High- and low-density cities support the same transmission speeds (110 to 3K bit/s asynchronous and 2.4 to 4.8 kbit/s synchronous), but vary in cost. The WATS and foreign exchange access ports support transmission speeds of 110 to 300 bit/s asynchronous and 1.2 kbit/s synchronous.

The Tymnet service can also be accessed in over 25 foreign countries. The Tymnet/Datapac connection enables local access from 57 cities in Canada and 150 cities in the U.S.

Telenet services

GTE Telenet employs a packet-switching network to provide data communications between customer stations at speeds ranging from 50 to 56K bit/s. Since Telenet accommodates a wide variety of terminal

speeds and protocols, customer stations communicating over the network do not have to operate at the same speeds or use the same protocols. Within the network, customer data is assembled into packets containing a maximum of 128 characters (1,000 bits). These data packets are then transmitted through the network to the receiving node along the fastest path, transparent to the user. Upon arriving at their destination, the packets are reassembled by the nodes into the data's proper form and sequence.

The actual number of characters in each packet is determined, to a large extent, by three or four operational parameters selected by the Telenet customer at the time the network is installed. The efficiency of using the packets is directly related to the cost of this network service.

Customers connect to the GTE Telenet nodes through asynchronous single-port (including private and public dial-in), asynchronous multiple-port, or station-to-station links. Customer stations link with one another, through the network, over virtual connections. Once a virtual connection is established, data is dynamically routed by the network from one node to another along the fastest path. Customer stations attached to an access node through an asynchronous single port can communicate over a single virtual connection only, so no further addressing is necessary during the session. Stations attached to the network by means of an asynchronous multiple port can concurrently operate up to 255 independent virtual connections to different customer stations. Station-to-station network links can be set up (through the nodes) between compatible customer stations operating at the same or at different speeds. These stations are equipped with asynchronous or synchronous interfaces and access the network through leased lines.

Over station-to-station links, dissimilar asynchronous stations operate in a network-virtual-terminal (NVT) mode, with the network-handling differences in code, format, and timing. Synchronous stations are connected to the network by station-to-station links that may likewise use single- or multiple-connection ports. When connected to a single-connection port, only synchronous stations with the same protocol can communicate with each other. Although the two stations can function at different speeds, the average data-transfer rate from the sending station must be compatible with the receiving station, since the network provides limited buffering. When synchronous stations are attached to the network through multiple-connection ports, the stations can communicate with each other or with asynchronous stations using any standard network speed and standard transmission protocol.

The GTE Telenet service protects data integrity by using acknowledgment packets, which are sent by the receiving node to the transmitting node upon arrival of a packet. If the transmitting node does not receive an acknowledgment or if an error is detected, then the packet is automatically retransmitted.

GTE Telenet services are available throughout the continental U.S. and are accessible in three classes of transmission speeds, depending on the location of the

Telenet Central Offices (TCOs). Class 1, Class 2, and Class 3 TCOs have access ports that support maximum speeds of 56, 9.6, and 1.2 kbit/s, respectively.

The several means of network access include public dial-in ports (which use local telephone exchanges or INWATS telephone connections), private dial-in ports, leased lines, TWX lines, and foreign exchange channels. There are also dedicated access facilities, which consist of a Telenet processor (TP) and an X.25 software interface. In addition, GTE Telenet recently acquired Cambridge Telecommunications, which had developed many synchronous interfaces (BSC, SDLC, HDLC) for the network. Telenet will most likely tariff these features in the near future.

GTE Telenet provides both rotary and private network services. The rotary feature allows customers to designate that certain ports be grouped together and assigned a single network address. Because of this capability, a virtual connection can be established between a distant station and the first available port in the group. The private network service is a control mechanism that lets a customer restrict access to and from his ports. Both services must be specified before network start-up.

Additional Telenet offerings are a private packet exchange (PPX) service, Nightline Service, and Hot Line Data Service. The PPX service reserves a group of ports in a TCO for a specific customer and performs as the customer's multiplexer, concentrator, or packet switch. It is accessed through dial-in, dedicated, or leased access ports. Nightline Service offers reduced rates for public dial-in subscribers who use the Telenet network during prescheduled, light-traffic hours. The Hot Line Data Service gives customers the option of a fixed monthly charge in lieu of packet charges for all traffic between a specified pair of leased network ports.

The GTE Telenet service can also be accessed by subscribers outside the continental U.S. Access is presently offered from 30 foreign countries, as well as Puerto Rico and Hawaii. Canadian access is available in 55 Canadian cities through an interconnection between GTE Telenet and Canada's Datapac.

A major concern in using GTE Telenet is efficiently using the packets to transmit data. This can be achieved by carefully selecting the values assigned to several variables. For example, there is a timeout mechanism that determines the maximum amount of time a packet remains at a node while being filled. By optimizing this value to suit his particular needs, the customer can have fairly efficient transmissions.

GTE Telenet's geographic scope, along with its range of supported transmission speeds and interfaces, offers relatively easy access to most prospective users. However, the transmission speeds are limited by the class of TCO a customer uses.

Comparison

Tymnet serves many smaller cities that GTE Telenet does not. It can therefore cover more of a company's office locations. Considering the additional cost of attaching a terminal to a node in a distant city, the proximity of that terminal to an access city (or port)

becomes an important factor in selecting a service.

However, the two services do not offer the same range of transmission speeds. While GTE Telenet supports speeds of up to 9.6 and 56 kbit/s, the maximum supported by Tymnet is 4.8 kbit/s. This disparity is offset to some degree by the additional compatibilities and protocols supported by Tymnet.

The actual price per character of information in the GTE Telenet system is a direct function of the efficient (or inefficient) use of the packets (see "Telenet, Tymnet: What the difference is," DATA COMMUNICATIONS, October 1978, p. 67). With GTE Telenet services, one character might cost the same as 128 characters because of the packet-switching technology.

What is next

The capabilities of commercial communications networks cannot be discussed without a look toward the future, because they are developing rapidly. GTE Telenet has announced plans to incorporate satellite and microwave links in its network, possibly making dedicated links available to customers. AT&T's ACS, if it ever becomes a reality, will provide a universal interface (through intelligent node processors) and will use the existing telephone network. In addition, Xerox's XTEN and Satellite Business Systems' satellite services are both likely to influence existing network offerings because of their potentially favorable prices and geographic coverage. How these services will affect existing commercial networks remains to be seen. ■

For more on carriers, see the following DATA COMMUNICATIONS articles.

1. "A current perspective on X.25 interface issues and answers," Paul M. Hale, January 1980, p. 83. The author describes the various methods of implementing a packet-switching network and the role of the international standard X.25 protocol in modern networking.
2. "How much must you pay for a leased line?," Gilbert Held, February 1980, p. 83. Basic formulas are given for determining the costs of several types of Bell System leased lines.
3. "Linking the satellite to a data communications net," Richard A. Langhans and Thompson H. Mitchell, February 1980, p. 99. Satellites are already serving large users, but there exists the potential for wider and more varied uses. The services of specialized common carriers are explored.
4. "User studies value-added-network response times," Michael P. Rose and J. Patrick O'Keefe, April 1980, p. 83. One test of carriers in 32 North American cities links performance to message size and distance.
5. "A synchronous ticket to packet networks," Sheldon Fox, Anthony Lavia, and Kenichi Kawaguchi, August 1980, p. 113. Three companies propose a standard interface that will convert the IBM 2780/3780 protocol from BSC to X.25's packet mode.
6. "Getting the most WATS for every communications dollar," Daniel Minoli, September 1980, p. 91. Increasingly, network managers are finding ways to optimize AT&T's WATS service to get more carrier service for every dollar they spend.

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 ITT Domestic Transmission Systems Inc
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 Muirhead Inc
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 Qwip Systems/Diy Exxon
 Orlando, FL
 RCA American Communications Inc
 Princeton, NJ
 RCA Global Communications Inc
 New York, NY
 Southern Pacific Distributed Message Systems
 McLean, VA
 SP Communications
 Burlingame, CA
 Western Union International, Inc
 New York, NY

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 New York, NY
 ITT World Communications Inc
 New York, NY
 RCA Global Communications Inc
 New York, NY
 SP Telecommunications Processing Co
 New York, NY
 TRT Telecommunications Corp
 Washington, DC
 Western Union International, Inc
 New York, NY
 Xerox Corporation
 Stanford, CT

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 San Carlos, CA
 GTE Telenet Communications Corp
 Vienna, VA
 Hawaiian Telephone Co
 Honolulu, HI
 ITT Domestic Transmission Systems Inc
 New York, NY
 ITT World Communications Inc
 New York, NY
 New Jersey Bell Telephone Co
 Newark, NJ
 RCA American Communications Inc
 Princeton, NJ
 RCA Global Communications Inc
 New York, NY
 SP Telecommunications Processing Co
 New York, NY
 TRT Telecommunications Corp
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Tymnet Inc
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PACKET-SWITCHING CARRIERS

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 GTE Telenet Communications Corp
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 Hawaiian Telephone Co
 Honolulu, HI
 ITT Domestic Transmission Systems Inc
 New York, NY
 ITT World Communications Inc
 New York, NY
 RCA Global Communications Inc
 New York, NY
 TRT Telecommunications Corp
 Washington, DC
 Tymnet Inc
 Cupertino, CA
 Western Union International, Inc
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 Washington, DC
 Cylix Communications Network
 Memphis, TN
 Data Communications Corp
 Memphis, TN
 GTE Lenkurt Inc
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 GTE Satellite Corp
 Stamford, CT
 ITT World Communications Inc
 New York, NY
 RCA American Communications Inc
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 GTE Lenkurt Inc
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 RCA American Communications Inc
 Princeton, NJ
 SP Communications
 Burlingame, CA
 SP Telecommunications Processing Co
 New York, NY
 Stanford Telecommunications Inc
 Sunnyvale, CA

Telton Corp
 Kirkland, WA
 United States Transmission Systems Inc
 New York, NY
 Western Tele-Communications Inc
 Denver, CO
 Western Union International, Inc
 New York, NY
 The Western Union Telegraph Co
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TELEPHONE COMPANIES

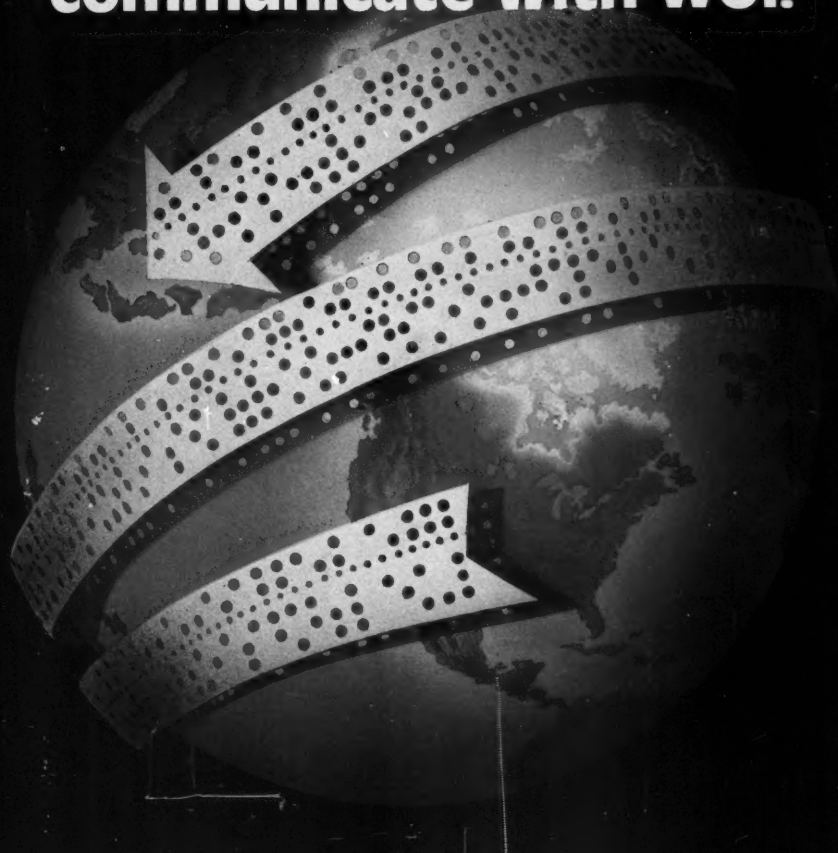
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 Morris Plains, NJ
Cincinnati Bell
 Cincinnati, OH
Compania Dominicana de Telefonos, C Por A
 Santo Domingo,
 Data Equipment Inc
 Sunnyvale, CA
General Telephone Co of Kentucky
 Lexington, KY
General Telephone Co of the Northwest
 Everett, WA
General Telephone Co of Wisconsin
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Glenayre Electronics Inc
 Blaine, WA
GTE Lenkurt Inc
 San Carlos, CA
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RCA Global Communications Inc
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Southern Telephone Supply
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SP Communications
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United States Transmission Systems Inc
 New York, NY
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VALUE-ADDED CARRIERS

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 Memphis, TN
 Datapoint Corporation
 San Antonio, TX
 GTE Telenet Communications Corp
 Vienna, VA
 Interactive Systems/3M
 Ann Arbor, MI
 ITT World Communications Inc
 New York, NY
 Nuclear Engineering Services Co
 Sunnyvale, CA
 RCA Globcom Systems Inc
 Authorized Resale Common Carrier
 New York, NY
 SP Telecommunications Processing Co
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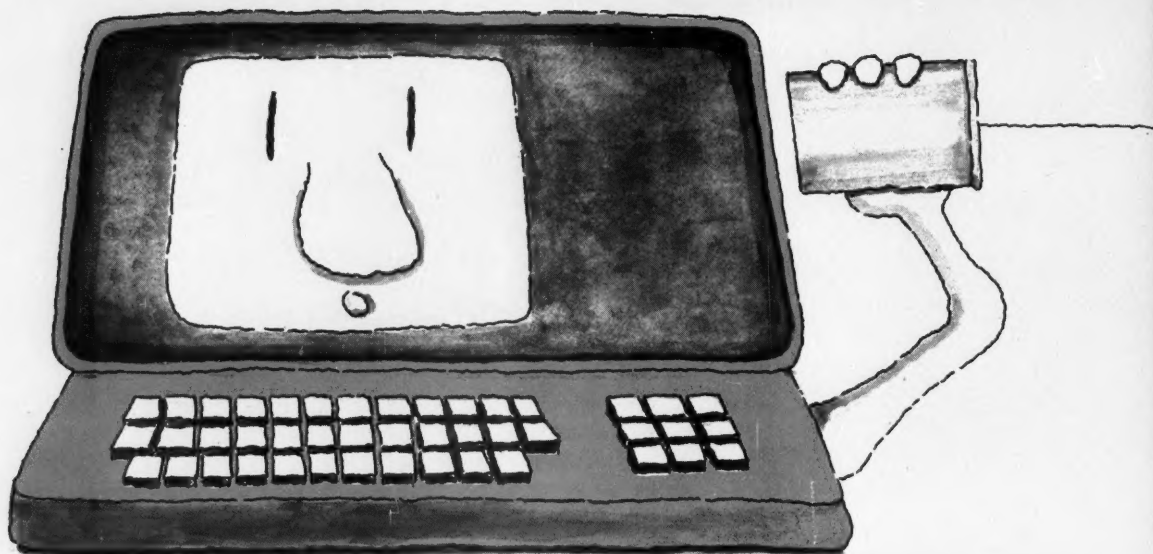
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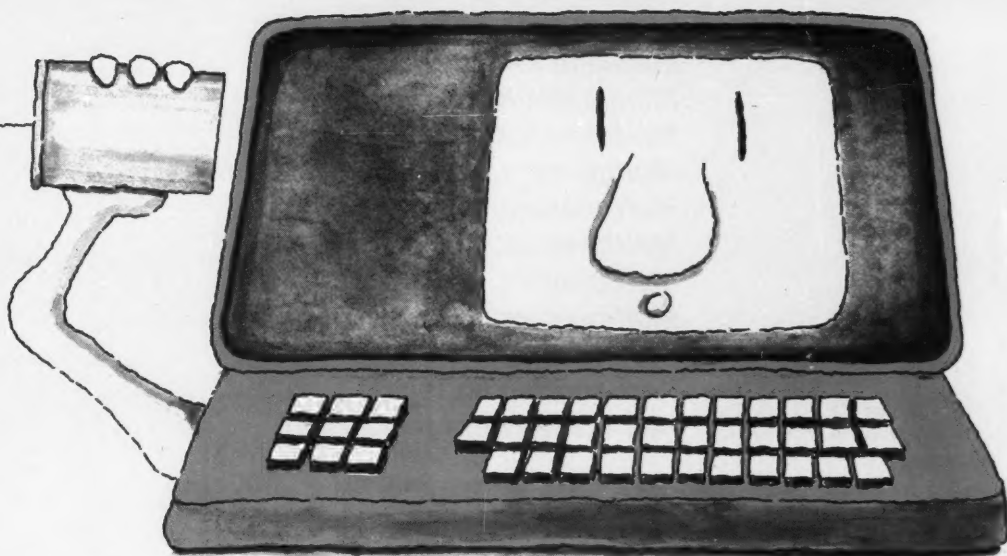
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Multiplexers, time-division

Packet selectors

Port-sharing units

Remote network processors

Data Concentration Equipment

Among the many problems facing today's computer-site manager is the explosive growth both in the number and variety of his company's processors and in their effective uses. Typically, most networks begin with a single mainframe and local terminals for limited applications. However, before long, a growing demand necessitates adding multiple computers and data communications features, while users clamor for even more data processing services.

The usual results of this growth are:

- Each terminal user is permanently assigned a computer port, even when not active.
- This user cannot connect to a different computer without making cable changes.
- Multiple dial-up telephone rotaries are required for each computer and for each transmission speed. (A dial-up rotary allows a remote-terminal user to call a single number and gain access to one of several auto-answer modems. This modem scans each telephone line for one that is not busy. If all lines are in use, it

generates a busy signal.)

An early approach to solving these dilemmas was the use of patch-panel equipment that both enabled a user to manually connect to multiple resources and, with additional cables and switches, provided a level of system monitoring and diagnostics. Since microcomputers can now function in add-on intelligence roles, a new approach is possible: using a micro-based intelligent patch panel (IPP), also called a port selector.

The figure shows a typical IPP configuration, where all users contend equally for computer resources. The necessary transparency of the device allows all users, regardless of connection technique (hardwired, dial-up, multiplexed), to connect to any of three computers and to different applications within each computer class; all from their terminal keyboards. (Class is defined here as a partitioned physical or programmed resource.)

Another problem is how best to gain access to the computer and the data resources of another network. Remote terminals have served this purpose, but with

the growth of automatic data handling, the volume of data is better suited to computer-to-computer interchange for real-time operation.

Direct connection of computers (one in each network) ties two networks together, making it possible for a user of one network to find a path to any computer or data file in the other one. Previously segregated communities and their databases are no longer entirely isolated when the network-to-network link is physically installed. Consequently, control and security of the link and all data files in each network become major concerns—especially with sensitive information.

There are also other network-interconnection considerations: (1) the possible difference in structure and operational-function detail (such as message/packet sizes, error-correction capability, and flow control of two networks) and (2) the minimization of the impact of a network failure.

Network interconnection requires the incorporation of a level of intelligence in the interconnecting link. This intelligent interface—called a gateway—is able to control the use of one network by operators in another.

Although full internetwork integration is the preferred way to achieve operation between digital information

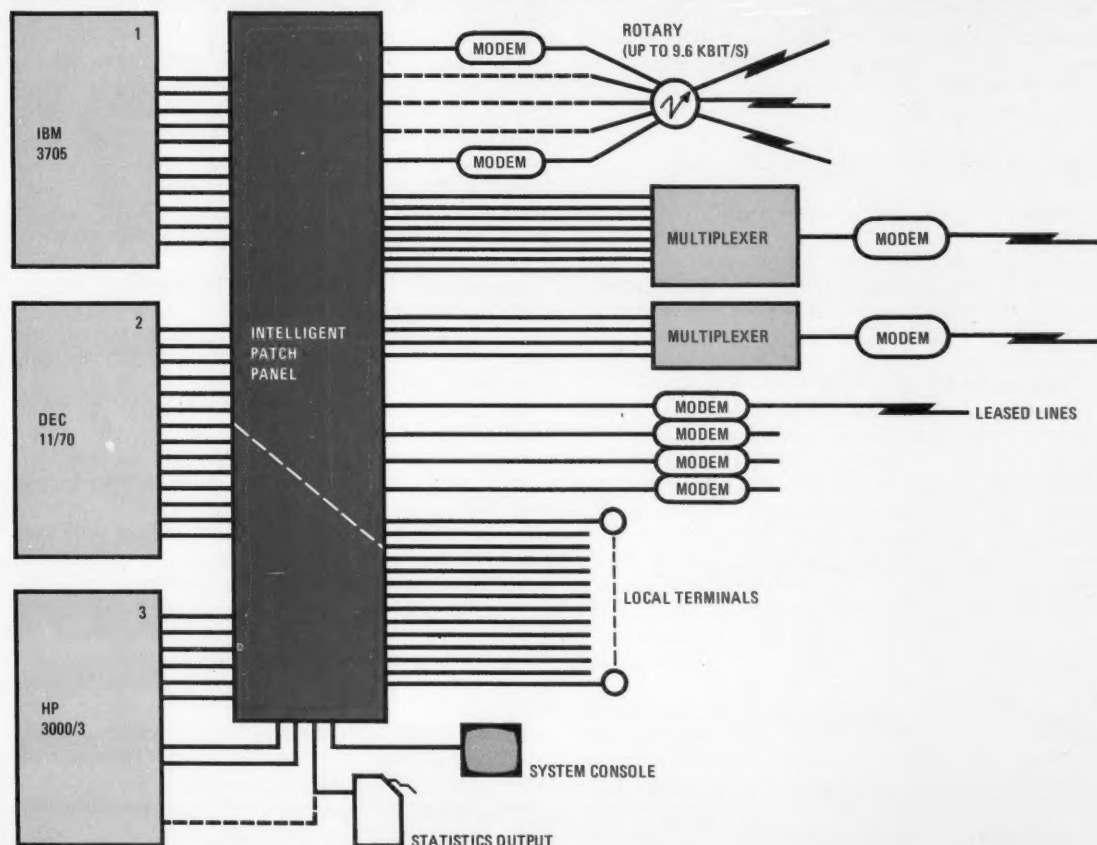
configurations, the use of a gateway between networks has two distinct advantages.

1. A gateway can serve as an interface and isolation point between networks, and such a solution is often more cost-effective than total integration. Closed communities are under no pressure to be fully integrated into more general networks, although there is a desire to interface with others for limited purposes.

2. The gateway can exert a control function to enhance network and host security by isolating one network from unauthorized users in another. A network host, then, has two levels of protection: one at the gateway to fend off users unauthorized at the network level and one at the local-network level as implemented in the host computer.

Gateways can be used to connect networks at either the switch (node) or the host level. The switch-level link operates as if the gateway were just another node in each of the two connected networks, and it functions as a normal packet switch for each of them. Although the switch-level connection is relatively simple in concept, it has been difficult to develop. Typical problems are reconciling differing addressing space, finding a method for a source host to specify a gateway as a

A typical IPP configuration



destination, and making the connected network appear as an extension of the source network. Much of the difficulty lies in nonstandard network protocols.

The host-level interconnection requires a gateway architecture in which the gateway appears as a host to each network. With this architecture, packets arrive at the node switch nearest the gateway, using local-network protocols. The gateway, acting as a host, receives a complete message and passes it to the second network.

Choosing the proper protocol

There are two common protocols from which to choose: end to end and network by network. An end-to-end protocol requires that any set of hosts in a network has a standard internetwork protocol, which may be in addition to the local-network protocol. Gateways provide minimal support of the end-to-end protocol itself, reducing gateway complexity.

However, with a network-by-network protocol, each gateway acts as a host to a connected network. Connections to the gateway are initiated by a source host on one network. The gateway, as a host on the other, attempts to initiate a link (if allowable) with a target host. Once the target host has accepted the connection, the gateway becomes transparent to the traffic flow between the two hosts.

The network-by-network approach is more complex, because the gateway must act as a host to each network and have appropriate translation intelligence. In the end-to-end environment, the source and destination hosts perform all protocol processing.

Down the best path

The addressing and routing of packets that travel between networks have somewhat different requirements from those of intranetwork packets. Addressing uniquely identifies each user host or application. Routing uses these addresses to determine the best path—or next step of the overall path—from source to destination. Problems arise when trying to preserve local network independence and maintain information paths between networks.

Addressing space must be sufficient to identify each packet's destination. Two addressing techniques commonly used are single-level and hierarchical. With single-level addressing, the number of address bits must specify any host in the connected networks. But because networks expand, there is a danger of excessive increases in address space to allow for full single-level addressing to any host. When address space is exhausted, software changes throughout each network are indicated. However, single-level addressing is a simple method that allows a user to move among hosts and networks and retain the same address.

In the hierarchical addressing scheme, the address field contains two parts: a network identifier and a host identifier. Although this method reduces address space, the same identifier cannot be employed if the host user changes networks.

Internetwork routing requires a global view that either all the network nodes or just the source host and

gateway participate in routing. The routing tables for the former may grow very large to allow the local-network node to have routing information for every node and host. But if only the source host and gateway are used in the routing technique, the impact on network nodes is less severe because information is stored at a gateway. Only local-network and global gateway data is then maintained at the nodes, as opposed to global routing information for every possible node and host computer.

Information flow is controlled in a set of connected networks by either a global technique, in which all nodes and gateways participate, or a local method, in which the gateways act as buffers. The global technique requires that information from all connected networks be available to each routing-control point. Flow control is exercised inside each network. Congestion in one network is isolated at the gateway, and data cannot spill over into the second network. Each host-level gateway stops the information flow to and from its network if it cannot dispose of the traffic.

Error rate decides

Error control may be exercised on either the end-to-end or the network-by-network level. For low-error-rate private networks, end-to-end error control increases transmission overhead least. Protocol complexity and buffering requirements in each gateway are also reduced. With larger error rates—for example, the approximate 1 in 10^6 rate found in public networks—the network-by-network error correction is more desirable, because an error is generally detected in—and retransmission limited to—the network in which it occurred. However, an increase in overhead, complexity, and buffer space are the disadvantages of this type of error control.

Another significant issue is security, especially in these areas:

- Access control—Where and how?
- Gateway ownership—Who controls its operation?
- Accountability—Observation and notification of normal and abnormal activities. (Billing functions are not considered here.)
- Encryption—Is it needed? If so, what type?

Access control concerns the placement and implementation of the control mechanism as a security "filter." Within a local network, it is customary to implement the access-control mechanism in the host computer or in its associated front end. The host then has the responsibility to reject an undesired connection from another user application in the network.

When a gateway and a connected network are involved, access control can also be implemented at the gateway itself. The gateway would have a built-in access-control or security filter that protects the network and its hosts from entry from undesired user functions in the connected network. Therefore, non-local users of the local network must pass two security filters, whereas local users pass only one—the host access control. Hosts programmed to refuse access by any nonlocal network hosts simply reject all attempts by the gateway to connect them.

A gateway is controlled by the network in which it resides. This arrangement may be unacceptable to those who control the second network because of their sensitive information and compartmentation goals. They may have to consider the gateway "untrusted" and have to provide more intervening software and hardware mechanisms.

This issue can be resolved with the gateway-half concept. Here, each network management implements one-half of the gateway, which includes the gateway host protocol for each network and the interface to its packet-switching node. In this way, the networks can use their own gateway halves as security filters that can be trusted. Standard host-level and switch-level software can be used. A simple communications line links the two halves. Each gateway half's computer is secured to its owner's standards, on his premises, and cannot be tampered with.

Local-network accountability is considered to have already been established; it is now necessary to consider accountability for internetwork activities. The gateway is the most logical site for accountability functions—such as security observations and violations—because that is where the fewest disruptions to an existing network occur. Because all internetwork communications passes through the gateway, it is the only place in which accountability is easily centralized.

Crypto and the gateway

End-to-end encryption, when applied to an internetwork connection, can impact the design of the gateway, especially if it operates at the node level. Some encryption schemes require that packets be properly formed in multiples of some bit-block size and that packets be delivered in sequence.

However, since the connected local networks may have different packet sizes, a standard packet size that can be accommodated by each network must be employed. This would likely require some host or packet-switching software modifications. The packet size

that satisfies encryption may not be the optimal size for communications efficiency in either network.

A host-level gateway operation can solve some data fragmentation and encryption problems. With this approach, the gateway receives a complete message from the host, including encrypted text. All packets are assembled by the packet switch to deliver the message at the host level. The gate passes this message—still end-to-end encrypted text—to the host side of the gateway for the second network. The packet switch then prepares the message for transmission through the second network. ■

For more on data concentration equipment, see the following DATA COMMUNICATIONS articles.

1. "How the gateway regulates information flow," September 1979, p. 61 and "What's the best approach to gateway design?" October 1979, p. 101, Henry H. Driver, H. Lynn Hopewell, and Joseph F. Iaquinto. Data flow is a growing phenomenon that has caused planners to rethink conventional networking schemes. Among the many gateway designs, one seems to stand out—at least for a closed-community network.
2. "Managing the combined virtual network," Stephen D. Hester, December 1979, p. 41. A major element for transmission-facility access is the PABX. Its combined voice and data features are examined here.
3. "Forest-products firm dedicates minis to many locations," Thomas B. Walsh, May 1980, p. 109. This company distributes its growing data processing capability without sacrificing central control.
4. "The month-to-month implementation of a private network," Henry J. Miller, June 1980, p. 52. Despite tight budgets, vendor problems, and operating headaches, this manager and his staff orchestrated a cost-effective network.
5. "Controlling the mushrooming communications net," Mark Vonarx, June 1980, p. 97. The microcomputer-based intelligent patch panel lets a few computer ports serve more and more users and applications.

COMPUTERIZED BRANCH EXCHANGE (CBX)

General Telephone Co of the Northwest
Everett, WA
General Telephone Co of Wisconsin
Sun Prairie, WI
Hawaiian Telephone Co
Honolulu, HI
Hitachi America Ltd
Doraville, GA
InteCom Inc
Dallas, TX
Northern Telecom Systems Corp
Minneapolis, MN
Rockwell-Collins
Dallas, TX
Rohm Corp
Santa Clara, CA
Southern New England Telephone Co
New Haven, CT
Stromberg-Carlson Corp
Tampa, FL
Wang Laboratories Inc
Lowell, MA

CONCENTRATORS

COMDESIGN INC
Goleta, CA ADV PG 42
COMPUTER COMMUNICATIONS INC
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DIGITAL COMMUNICATIONS CORP
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GANDALF DATA INC
Wheeling, IL ADV PG 70
GENERAL DATACOMM IND INC
Danbury, CT ADV PG 63
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY ADV PGS 152-153
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ ADV PG 39
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 142
MEMOREX CORP
Cupertino, CA ADV PG 32A
MICOM SYSTEMS INC
Chatsworth, CA ADV PGS
Cover III, 37, 67
RCA SERVICE CO
DATA SERVICES
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TIMEPLEX INC
Rochelle Park, NJ ADV PG 40
TRAN TELECOMMUNICATIONS CORP
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American Used Computer Co
Boston, MA
Ames Color File
Somerville, MA
Applied Systems Corp
St Claire Shores, MI
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Boston, MA
The Braegen Corp
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Cambridge Telecommunications
Burlington, MA
Candela Electronics
Sunnyvale, CA
ComDesign Inc
Goleta, CA
Commex Inc
Crofton, MD
Computer Communications Inc
Torrance, CA
Conversational Systems Corp
New York, NY

CSS Telecommunications
Mountain View, CA
Custom Terminals
Hauppauge, NY
Data Communications Corp
Memphis, TN
Hauppauge, NY
Doylestown, PA
Digicom Data Products Inc
San Jose, CA
Digital Communications Corp
Div MA/Com
Germantown, MD
ENA Datasystems Inc
Rexdale, ON
Epic Data Corp
Richmond, BC
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Franklin Systems Corp
A Div of Int'l Comm Sciences Inc
Westlake Village, CA
Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
General Datacomm Ind Inc
Danbury, CT
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of the Northwest
Everett, WA
Giltronix Inc
Palo Alto, CA
GTE Telenet Communications Corp
Vienna, VA
Honeywell Information Systems
Waltham, MA
Infolink Data Communications
San Diego, CA
Infotron Systems Corporation
Cherry Hill, NJ
Innovative Electronics Inc
Miami Lakes, FL
Intelligent Terminals Inc
Los Altos, CA
Kaufman Research Mfg Inc
Los Altos Hills, CA
Leasametric
Foster City, CA
Lemcom Systems Inc
Phoenix, AZ
Memorex Corp
Cupertino, CA
Micom Systems Inc
Chatsworth, CA
NCR Comten Inc
St Paul, MN
NCR Corp
Dayton, OH
Paradyne Corp
Largo, FL
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Phone 1 Inc
Rockford, IL
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
RCA Global Communications Inc
New York, NY
RCA Service Co
Data Services
Cherry Hill, NJ
Rockwell-Collins
Dallas, TX
Sidereal Corp
Portland, OR
Sperry Univac, MCO
Irvine, CA

Storage Technology Corp
Louisville, CO
Systar Corporation
San Jose, CA
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Trendata/Standard Memories
Santa Ana, CA

FRONT-END PROCESSORS

CODEX CORPORATION
Mansfield, MA ADV PGS 5, 34-35
COMDESIGN INC
Goleta, CA ADV PG 42
COMPUTER COMMUNICATIONS INC
Torrance, CA ADV PG 41
DIGITAL COMMUNICATIONS ASSOC
INC
Norcross, GA ADV PG 36
DIGITAL COMMUNICATIONS CORP
DIV MA/COM
Germantown, MD ADV PG 43
GANDALF DATA INC
Wheeling, IL ADV PG 70
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 142
MEMOREX CORP
Cupertino, CA ADV PG 32A
TIMEPLEX INC
Rochelle Park, NJ ADV PG 40
American Satellite Company
Germantown, MD
AM Jacquard Systems
Santa Monica, CA
Applied Systems Corp
St Claire Shores, MI
ASI Teleprocessing
Watertown, MA
Associated Computer Consultants
Santa Barbara, CA
Astron Data Systems Inc
Austin, TX
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
C&W Incotel Ltd
New York, NY
Cambridge Telecommunications
Burlington, MA
Codex Corporation
Mansfield, MA
ComDesign Inc
Goleta, CA
Computer Automation
Naked Mini Div
Irvine, CA
Computer Communications Inc
Torrance, CA
Computing Devices Div
Control Data Corp
Ottawa, ON
Control Data Corp
Minneapolis, MN
Conversational Systems Corp
New York, NY
CSPI
Billerica, MA
Custom Terminals
Hauppauge, NY
Data Communications Corp
Memphis, TN
Data Stream Communications Inc
Mountain View, CA
Digital Communications Assoc Inc
Norcross, GA

Digital Communications Corp
Germantown, MD
Digital Systems Corp
Walkersville, MD
DPF Inc
Hartsdale, NY
Epic Data Corp
Richmond, BC
Esterline Angus Instrument Corp
Indianapolis, IN
E-Systems Inc., ECI Div.
St. Petersburg, FL
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Formation Inc
Mt Laurel, NJ
Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
GNAT Computers, Inc.
San Diego, CA
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Hydriol Control Systems Div
Houston, TX
Infolink Data Communications
San Diego, CA
Innovative Electronics Inc
Miami Lakes, FL
Intelligent Terminals Inc
Los Altos, CA
Interactive Systems/3M
Ann Arbor, MI
Kaufman Research Mfg Inc
Los Altos Hills, CA
Lemcom Systems Inc
Phoenix, AZ
Memorex Corp
Cupertino, CA
National Data Corp
Atlanta, GA
NCR Comten Inc
St Paul, MN
NCR Corp
Dayton, OH
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Plessey Peripheral Systems
Irvine, CA
Quad Systems Inc
Gaithersburg, MD
RCA Global Communications Inc
New York, NY
Rockwell-Collins
Dallas, TX
Sideral Corp
Portland, OR
Silicon Systems Inc
Tustin, CA
Software Results Corp
Columbus, OH
Software Results Corporation
Columbus, OH
Sperry Univac
Blue Bell, PA
Systar Corporation
San Jose, CA
Systems Research Inc
Okemos, MI
Texas Instruments Digital Systems Group
Houston, TX
Timeplex Inc
Rochelle Park, NJ
The TRW-Fujitsu Co
Los Angeles, CA
Zitel Corp
San Jose, CA

LINE SHARING UNITS

CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
EXPANDOR INC
Pittsburgh, PA ADV PG 144
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 142
INTERTEL INC
Andover, MA ADV PG 87
MODEMS PLUS INC
Decatur, GA ADV PG 38
PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA ADV PG 45
RIXON INC
Silver Spring, MD ADV PG 32
Cambridge Telecommunications
Burlington, MA
Codex Corporation
Mansfield, MA
Custom Terminals
Hauppauge, NY
David Jamison Carlyle Corp
Los Angeles, CA
Develcon Electronics Inc
Doylestown, PA
Digicom Data Products Inc
San Jose, CA
Electrodata Inc
Bedford Heights, OH
Expandor Inc
Pittsburgh, PA
General Telephone Co of the Northwest
Everett, WA
Innovative Electronics Inc
Miami Lakes, FL
Interactive Systems/3M
Ann Arbor, MI
Interrel Inc
Andover, MA
Leasametric
Foster City, CA
Modems Plus Inc
Decatur, GA
Paradyne Corp
Largo, FL
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Quad Systems Inc
Gaithersburg, MD
Ramcom Systems
Los Angeles, CA
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Sideral Corp
Portland, OR
United Data Services Co Inc
Phoenix, AZ
Via West
Phoenix, AZ
Western Telematic Inc
Santa Ana, CA

MESSAGE SWITCHERS

BOLT BERANEK & NEWMAN
INFORMATION MANAGEMENT CORP
Cambridge, MA ADV PGS 18-19
COMPUTER COMMUNICATIONS INC
Torrance, CA ADV PG 41
DIGITAL COMMUNICATIONS CORP
DIV MA/COM
Germantown, MD ADV PG 43
GANDALF DATA INC
Wheeling, IL ADV PG 70
RCA SERVICE CO
DATA SERVICES
Cherry Hill, NJ ADV PG 154
Action Communication Systems Inc
Dallas, TX
American Used Computer Co
Boston, MA

Applied Systems Corp
St Claire Shores, MI
Bolt Beranek & Newman Information
Management Corp
Cambridge, MA
Boston Financial & Equity Corp
Boston, MA
C&W Incotel Ltd
New York, NY
Cado Systems Corp
Torrance, CA
Cambridge Telecommunications
Burlington, MA
Commex Inc
Crofton, MD
Compression Labs Inc
Cupertino, CA
Computer Communications Inc
Torrance, CA
Control Data Corp
Minneapolis, MN
Conversational Systems Corp
New York, NY
Custom Terminals
Hauppauge, NY
Cylrix Communications Network
Memphis, TN
Digital Communications Corp
Div MA/Com
Germantown, MD
ENA Datasystems Inc
Rexdale, ON
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A Div of Int'l Comm Sciences Inc
Westlake Village, CA
Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
General Telephone Co of the Northwest
Everett, WA
Giltronix Inc
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Vienna, VA
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Doraville, GA
Honeywell Information Systems
Waltham, MA
Industrial Computer Controls Inc
Cambridge, MA
ITT Business Sys & Comm Grp
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Los Altos Hills, CA
NCR Comten Inc
St Paul, MN
NCR Corp
Dayton, OH
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Ramcom Systems
Los Angeles, CA
Raytheon Data Systems
Mini-Computer Div
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New York, NY
RCA Service Co
Data Services
Cherry Hill, NJ
Rockwell-Collins
Dallas, TX
Silicon Systems Inc
Tustin, CA
Singer Co
Librascope Div
Glendale, CA
Systar Corporation
San Jose, CA
TRT Telecommunications Corp
Washington, DC

For further catalog information, turn to
UpDate Service Card, page 201.

The TRW-Fujitsu Co
Los Angeles, CA
Tymnet Inc
Cupertino, CA

MINICOMPUTERS

TIMEPLEX INC
Rochelle Park, NJ **ADV PG 40**

Able Computer
Irvine, CA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Applied Systems Corp
St Claire Shores, MI
Associated Computer Consultants
Santa Barbara, CA
Aydin Controls
Ft Washington, PA
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
C & W Incotel Ltd
New York, NY
Cado Systems Corp
Torrance, CA
Cambridge Telecommunications
Burlington, MA
CMC Marketing Corp
Houston, TX
Computer Automation
Naked Mini Div
Irvine, CA
Computer Devices Inc
Burlington, MA
Computing Devices Div
Control Data Corp
Ottawa, ON
Convergent Technologies
Santa Clara, CA
Conversational Systems Corp
New York, NY
CSPI
Billerica, MA
Data Communications Corp
Memphis, TN
Data Dimensions Inc
Norwalk, CT
Data General Corporation
Westboro, MA
Datapoint Corporation
San Antonio, TX
David Jamison Carlyle Corp
Los Angeles, CA
Digital Equipment Corp
Maynard, MA
Digital Systems Corp
Walkersville, MD
Electronic Interface Assoc Inc
New York, NY
First Computer Corp
Westmont, IL
Formation Inc
Mt Laurel, NJ
Franklin Systems Corp
A Div of Int'l Comm Sciences Inc
Westlake Village, CA
Gamma Technology Inc
Palo Alto, CA
GDS Inc
Seattle, WA
General Automation
Anaheim, CA
GTE Comp-Acct
Anaheim, CA
GTE Telenet Communications Corp
Vienna, VA
Hetra Computer & Communications
Industries Inc
Melbourne, FL

Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Infolink Data Communications
San Diego, CA
Intelligent Systems Corp
Norcross, GA
Interactive Systems/3M
Ann Arbor, MI
Intersil Inc
Cupertino, CA
Lantor Inc
Playa Del Rey, CA
Logical Machine Corporation
Sunnyvale, CA
Microdata Corporation
Irvine, CA
Modular Computer Systems
Fort Lauderdale, FL
Monolithic Systems Corp
Englewood, CO
MSI Data Corp
Costa Mesa, CA
MTI Sales Corp
Great Neck, NY
Northern Telecom Systems Corp
Minneapolis, MN
Paradyne Corp
Largo, FL
Peripherals Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Plessy Peripheral Systems
Irvine, CA
Point-4 Data Corp
Irvine, CA
Prime Computer Inc
Natick, MA
Qantel Corporation
Hayward, CA
Quad Systems Inc
Gaithersburg, MD
Raytheon Data Systems/Terminal Div
Norwood, MA
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
RCA Global Communications Inc
New York, NY
Royal Business Machines Inc
Hartford, CT
SCI Systems Inc
Huntsville, AL
Sentinel Computer Corp
Cincinnati, OH
Software Results Corp
Columbus, OH
Software Results Corporation
Columbus, OH
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Systems Engineering Laboratories Inc
Fort Lauderdale, FL
Systems Research Inc
Okemos, MI
Texas Instruments Digital Systems Group
Houston, TX
Timeplex Inc
Rochelle Park, NJ
The TRW-Fujitsu Co
Los Angeles, CA
Two PI Corp
Santa Clara, CA
Tymnet Inc
Cupertino, CA
Wang Laboratories Inc
Lowell, MA

MODEM SHARING UNITS

ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 68**
AVANTI COMMUNICATIONS CORP
Newport, RI **ADV PG 62**
CODEX CORPORATION
Mansfield, MA **ADV PGS 5,34-35**
COMPRES COMM INC
Champaign, IL **ADV PG 44**
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**
EXPANDOR INC
Pittsburgh, PA **ADV PG 144**
GANDALF DATA INC
Wheeling, IL **ADV PG 70**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
INTERTEL INC
Andover, MA **ADV PG 87**
MODEMS PLUS INC
Decatur, GA **ADV PG 38**
RACAL-MILGO
Miami, FL **ADV PGS 30-31**
RCA SERVICE CO
DATA SERVICES
Cherry Hill, NJ **ADV PG 154**
RIXON INC
Silver Spring, MD **ADV PG 32**
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ **ADV PG 79**
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA **ADV PG Cover II**
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL **ADV PG Cover IV**
Applied Delta Systems Inc
Bellmawr, NJ
ARK Electronic Products
Melbourne, FL
Avanti Communications Corp
Newport, RI
W A Brown Instruments
Orlando, FL
Cambridge Telecommunications
Burlington, MA
Chess
Denver, CO
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Compres Comm Inc
Champaign, IL
Data Stream Communications Inc
Mountain View, CA
David Jamison Carlyle Corp
Los Angeles, CA
Develcom Electronics Inc
Doylestown, PA
Digicom Data Products Inc
San Jose, CA
DigiLog Systems Inc
Network Control Div
Horsham, PA
DMC Systems Inc
Santa Clara, CA
Electronic Interface Assoc Inc
New York, NY
Expandor Inc
Pittsburgh, PA
General Telephone Co of the Northwest
Everett, WA
Giltronic Inc
Palo Alto, CA

Companies are listed alphabetically with all needed information in the **Vendor Directory, page 301.**

Hawaiian Telephone Co
Honolulu, HI
Innovative Electronics Inc
Miami Lakes, FL
International Data Sciences Inc
Lincoln, RI
Intertel Inc
Andover, MA
Kapusi Laboratories
San Mateo, CA
Leasametric
Foster City, CA
Megadata Corp
Bohemia, NY
Modems Plus Inc
Decatur, GA
MTI Sales Corp
Great Neck, NY
National Data Corp
Atlanta, GA
NCR Comten Inc
St Paul, MN
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
PolyMorphic Systems
Santa Barbara, CA
Racal-Milgo
Miami, FL
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
RCA Service Co, Data Services
Cherry Hill, NJ
Rixon Inc
Silver Spring, MD
Silicon Systems Inc
Tustin, CA
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Sperry Univac
Blue Bell, PA
Teleprocessing Products Inc
Simi Valley, CA
Tel-Tex Inc
Houston, TX
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
United Data Services Co Inc
Phoenix, AZ
Universal Data Systems Inc
Huntsville, AL
Versitron Inc
Washington, DC
Via West
Phoenix, AZ

MULTIPLEXERS, FREQUENCY DIVISION

ARK ELECTRONIC PRODUCTS
Melbourne, FL ADV PG 68
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT ADV PG 64
GENERAL DATACOMM IND INC
Danbury, CT ADV PG 63
PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA ADV PG 45
TIMEPLEX INC
Rochelle Park, NJ ADV PG 40
American Used Computer Co
Boston, MA
ARK Electronic Products
Melbourne, FL
Boston Financial & Equity Corp
Boston, MA
Chess
Denver, CO

Coherent Communications
Hauppauge, NY
ComData Corp
Skokie, IL
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Data Dimensions Inc
Norwalk, CT
David Jamison Carlyle Corp
Los Angeles, CA
Electronic Interface Assoc Inc
New York, NY
E-Systems Inc.
ECI Div.
St. Petersburg, FL
Farinon Electric
San Carlos, CA
Frederick Electronics Corp
Frederick, MD
General Datacomm Ind Inc
Danbury, CT
General Telephone Co of the Northwest
Everett, WA
GTE Lenkurt Inc
San Carlos, CA
Interactive Systems/3M
Ann Arbor, MI
Linkabit Corporation
San Diego, CA
MTI Sales Corp
Great Neck, NY
Prentice Corp
Sunnyvale, CA
Pulsecom Div/Harvey Hubbell
Falls Church, VA
QEI Inc
Springfield, NJ
RCA Global Communications Inc
New York, NY
Sangamo Weston Data System Div
Sarasota, FL
Tele-Signal Corp
Hauppauge, NY
Timeplex Inc
Rochelle Park, NJ
Wang Laboratories Inc
Lowell, MA

MULTIPLEXERS, TIME DIVISION

CODEx CORPORATION
Mansfield, MA ADV PGS 5,34-35
COMPRE COMM INC
Champaign, IL ADV PG 44
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT ADV PG 64
GANDALF DATA INC
Wheeling, IL ADV PG 70
GENERAL DATACOMM IND INC
Danbury, CT ADV PG 63
HALCYON
San Jose, CA ADV PGS 82-83
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ ADV PG 39
INTERTEL INC
Andover, MA ADV PG 87
MICO SYSTEMS INC
Chatsworth, CA ADV PGS
Cover III,37,67
RIXON INC
Silver Spring, MD ADV PG 32
TIMEPLEX INC
Rochelle Park, NJ ADV PG 40
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina Del Rey, CA ADV PG Cover II
American Used Computer Co
Boston, MA
Applied Delta Systems Inc
Bellmawr, NJ

Boston Financial & Equity Corp
Boston, MA
Canoga Data Systems
Canoga Park, CA
Chess
Denver, CO
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Compre Comm Inc
Champaign, IL
Computrol Corp
Ridgefield, CT
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Data Dimensions Inc
Norwalk, CT
Dataproducts New England
Wallingford, CT
David Jamison Carlyle Corp
Los Angeles, CA
Electronic Interface Assoc Inc
New York, NY
Farinon Electric
San Carlos, CA
Frederick Electronics Corp
Frederick, MD
Gandalf Data Inc
Wheeling, IL
General Automation
Anaheim, CA
General Datacomm Ind Inc
Danbury, CT
General Telephone Co of the Northwest
Everett, WA
Halcyon
San Jose, CA
Hawaiian Telephone Co
Honolulu, HI
Infolink Data Communications
San Diego, CA
Infotron Systems Corporation
Cherry Hill, NJ
Interactive Systems/3M
Ann Arbor, MI
Intertel Inc
Andover, MA
Linkabit Corporation
San Diego, CA
Micom Systems Inc
Chatsworth, CA
QEI Inc
Springfield, NJ
Ramcom Systems
Los Angeles, CA
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Sangamo Weston Data System Div
Sarasota, FL
Stanford Telecommunications Inc
Sunnyvale, CA
Terracom
San Diego, CA
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
TRW Vidar
Sunnyvale, CA
Valtec Corp
West Boylston, MA
Versitron Inc
Washington, DC

INVERSE MULTIPLEXERS

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 142

MICOM SYSTEMS INC

Chatsworth, CA **ADV PGS**
Cover III,37,67

TIMEPLEX INC

Rochelle Park, NJ **ADV PG 40**

Able Computer

Irvine, CA

Cambridge Telecommunications

Burlington, MA

David Jamison Carlyle Corp

Los Angeles, CA

ENA Datasystems Inc

Rexdale, ON

Innovative Electronics Inc

Miami Lakes, FL

Interactive Systems/3M

Ann Arbor, MI

Leasametric

Foster City, CA

Micom Systems Inc

Chatsworth, CA

Paradyne Corp

Largo, FL

Timeplex Inc

Rochelle Park, NJ

Via West

Phoenix, AZ

MULTIPLEXERS, STATISTICAL (INTELLIGENT)

CODEX CORPORATION

Mansfield, MA **ADV PGS 5,34-35**

COMDESIGN INC

Goleta, CA **ADV PG 42**

COMPRE COMM INC

Champaign, IL **ADV PG 44**

**DIGITAL COMMUNICATIONS ASSOC
INC**

Norcross, GA **ADV PG 36**

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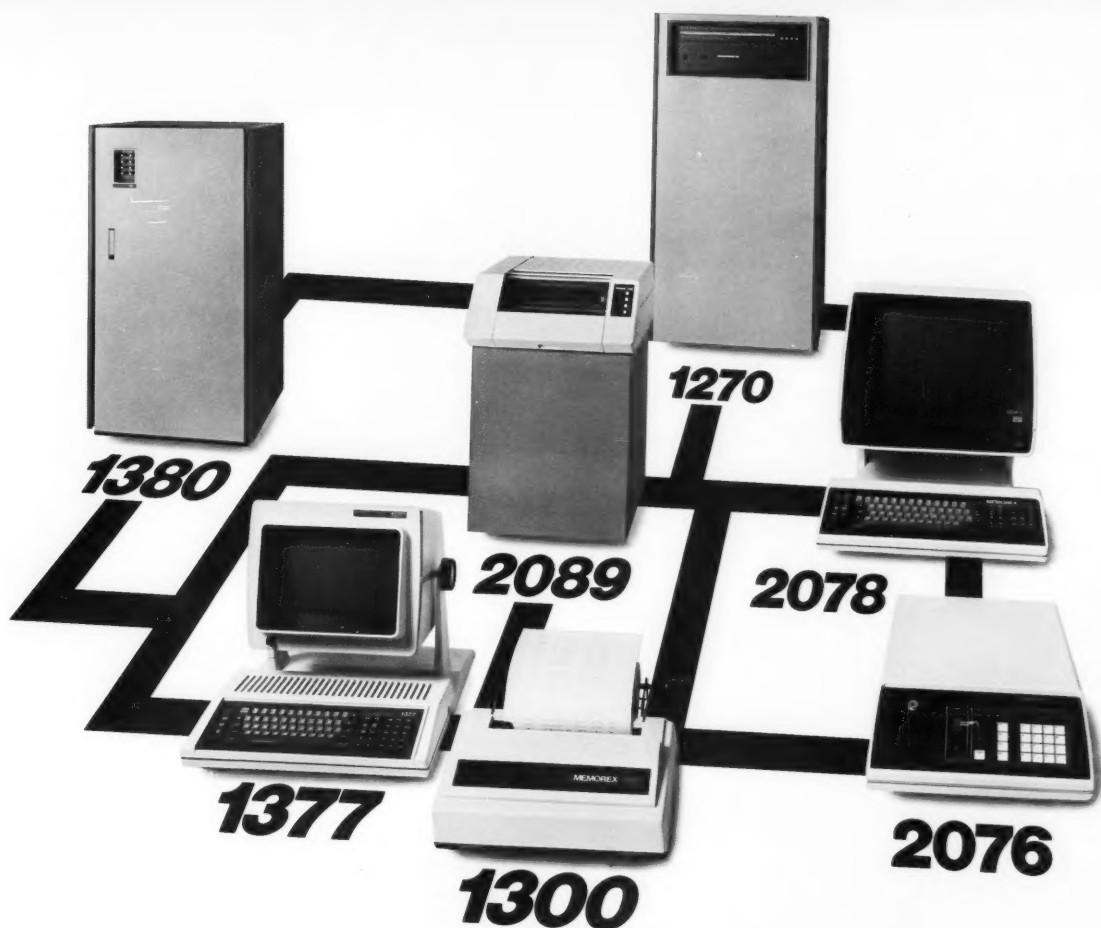


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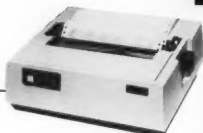
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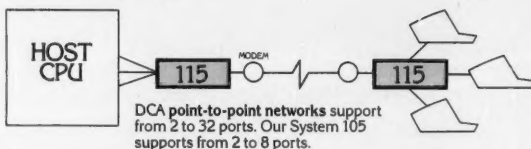
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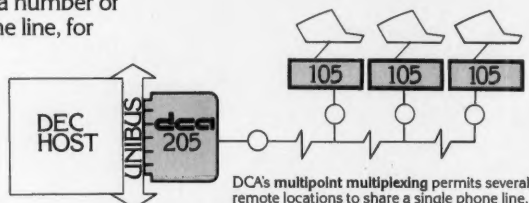
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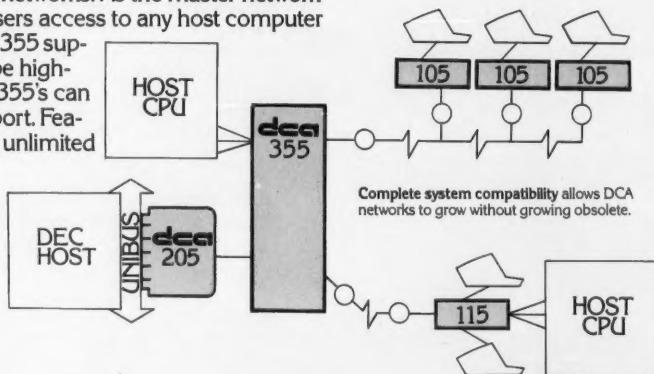


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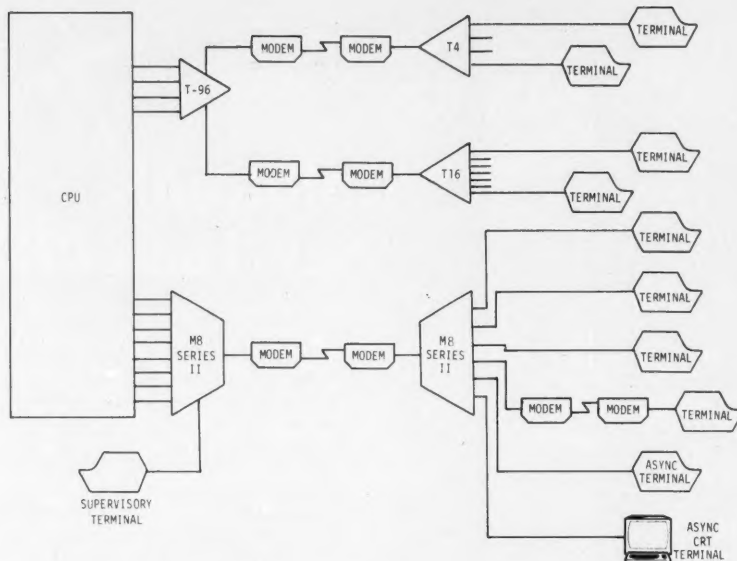
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*Pat. pend.

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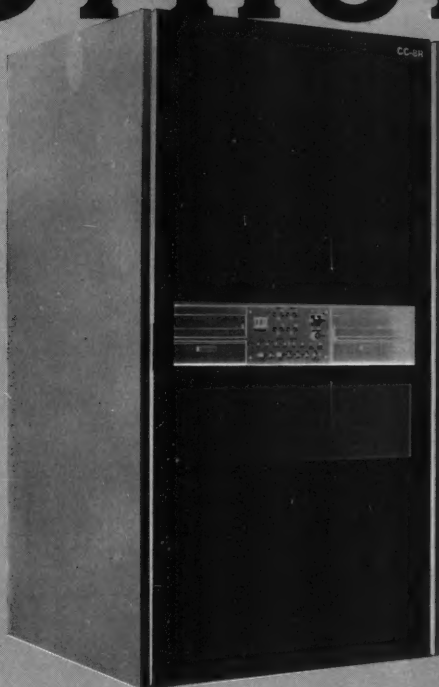
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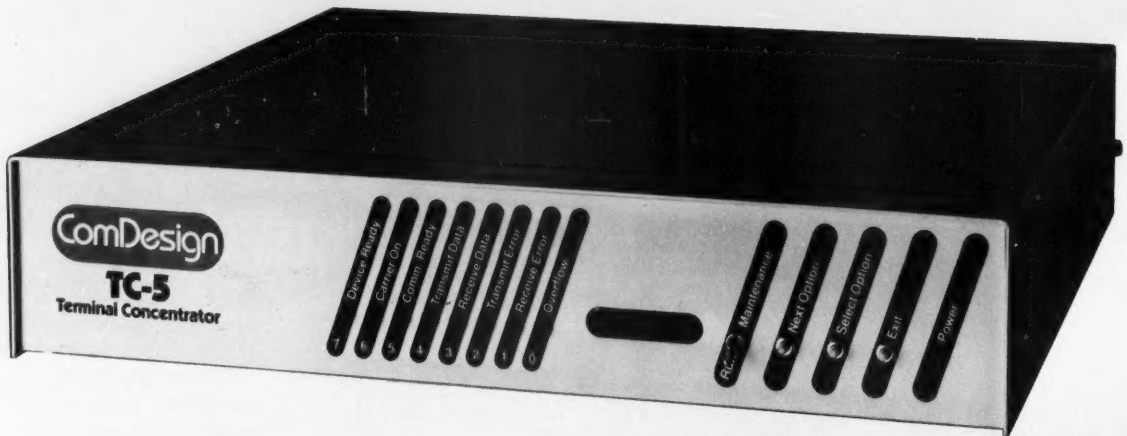


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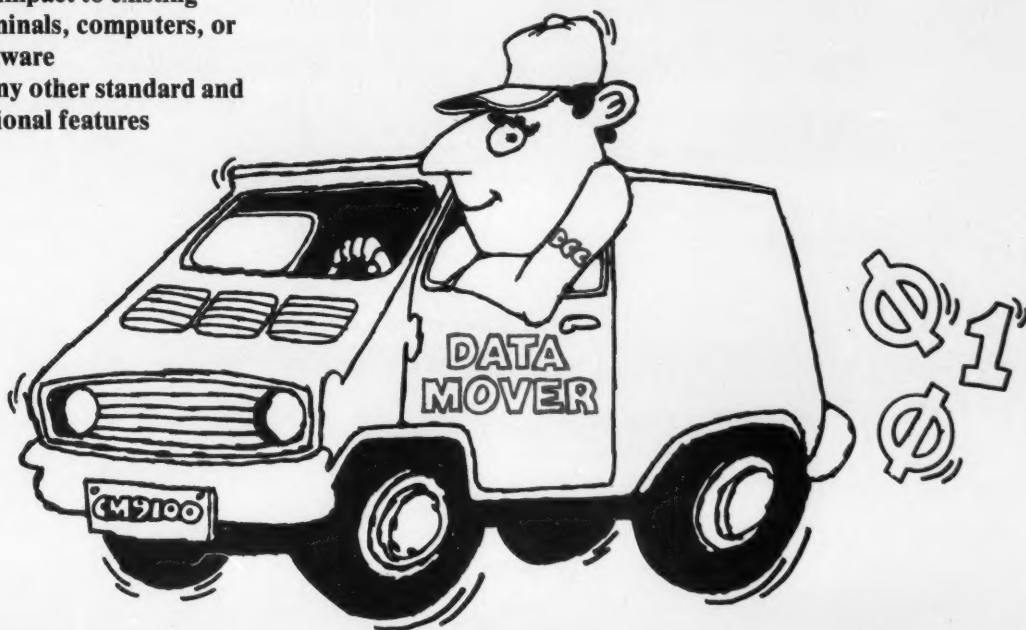
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Data Transmission Equipment

The most significant technological boost to data transmission in recent years has been the increased use of quadrature amplitude modulation (QAM). In the main, modem manufacturers have been most aggressive in applying this technique because it adopts encoding and modulation methods that measure channel parameters and line impairments by pressing low baud rates into service (see "Interpreting the baud"). At a low baud rate, there is a long baud interval—about 25 milliseconds—making equalization unnecessary.

To bypass equalization, a QAM modem waits during the long baud interval for all carrier signals to arrive and stabilize before starting the demodulation process. This permits more time for decoding received signals than is allowed with conventional modems. In addition, the duration of a line interference, or a "hit," is reduced relative to the carrier signal's baud duration.

The need for a new modulation/demodulation approach became evident when efforts to rid QAM of its drawbacks—signal distortion, line interference, and

frequently inaccurate data recovery—ran headlong into a signal's inherent trait, namely, a high bit rate in proportion to telephone-line bandwidth. Designers, in their efforts to solve the problems, applied automatic-equalizing techniques, sophisticated analog circuitry, and large-scale integration schemes. But the constant bit-rate problem counteracted each apparent solution, until, finally, the designers exhausted all possibilities for QAM enhancements.

QAM, which partitions a serial binary data stream into the 16 4-bit groups shown in Figure 1, exhibited the insolubility of its basic trait in various troubled performances. For example, as the signal passed through the middle frequencies of a telephone channel, its high and low frequencies were delayed up to several milliseconds. Because of this distortion, known as envelope delay, the received signal often looked different from the transmitted signal. With its components displaced, or smeared, the signal had to be restored to its original form by complex equalizing techniques

Interpreting the baud

Often misunderstood, the baud is actually the interval of time during which a transmitted signal maintains the same intelligence, that is, the states of one or more bits of data. The frequency-shift-key modem, for instance, represents the zero state of a data bit by transmitting at 1,070 Hz for the entire bit duration. The one state is represented by changing the transmitted frequency to 1,270 Hz, again for the bit duration. When the signal has only these two states, the baud rate is equal to the data rate.

Permitting the signal to assume more than two states gives rise to modulation schemes in which the baud rate is lower than the data rate. In quadrature amplitude modulation, the signal assumes any of 16 defined combinations of phase and amplitude. Each phase and amplitude represents one of the 16 possible combinations of the states of each 4-bit group ($2^4 = 16$). Hence, the signal changes only a quarter of the bit rate, resulting in a 2,400-baud signal for a data rate of 9.6 kbit/s. This high baud rate (or short baud interval of 0.0004166 second, or about 420 microseconds) with its inherent line noise creates the need for equalizers to cope with channel envelope delay. It follows, then, that the use of low baud rates diminishes the need for equalizers and increases the immunity to impulse noise.

before the data could be recovered.

Further, because 16 different phase and amplitude modulations were needed to act on each 4-bit group to get the data onto the carrier wave, the receiver's decision circuitry was unduly taxed. It should accurately recover data from the signal, but it can do so only for the short time during which the phase and amplitude information is valid.

Finally, the line hits temporarily distorted the phase and amplitude of the received signal. Whenever these random distortions occurred, the receiver inaccurately identified the data content. Since hit duration usually exceeds bit duration, the receiver had little chance to recover the smeared data. (Sometimes, however, error recovery is possible. A computer outfitted with the proper protocols can make a second decision on data content, a recovery, by retransmitting the signal. But such retransmission is an inefficient use of the line and sufficiently expensive to make it undesirable to users watching costs.)

New encoding scheme

To overcome these drawbacks, as well as the conventional modem's generally limited diagnostic techniques, such as the loopback method, engineers set two goals: to develop a novel encoding-modulation scheme and to infuse this development with the capability to measure channel parameters and line impairments. Both objectives hinged on a low baud rate. This solution, rather than attempting to overcome QAM's drawbacks, which seemed insurmountable, simply ignored the signal's characteristics.

The seemingly conflicting requirements for both a high data rate and a low baud rate were resolved by employing a transmission method that uses numerous carrier frequencies. Uniformly spaced across the channel passband, each carrier handles only a portion of the total data stream.

Digital solution

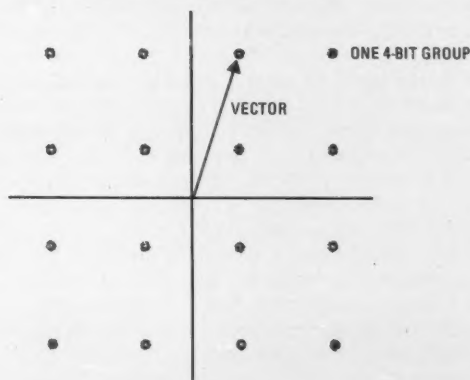
The QAM modem design is almost totally digital. The device is essentially a processor, being a modem as well as a programmed line analyzer and performing both roles without shutting off the data flow.

ABC Inc.'s modem, for example, uses a 24-bit processor. Fetch, transfer, and arithmetic functions are overlapped in a pipeline architecture to attain an execution speed of 10 million instructions per second. FETCH tells the modem to retrieve a piece of data or to go to the next memory location for further instructions. TRANSFER sends a piece of data from the processor to the memory. The arithmetic functions include addition, subtraction, multiplication, division, logical comparisons, and so on. The pipeline architecture allows the appearance of simultaneous rather than serial execution of instructions. In addition, the following functions, all operating in real time, are interleaved:

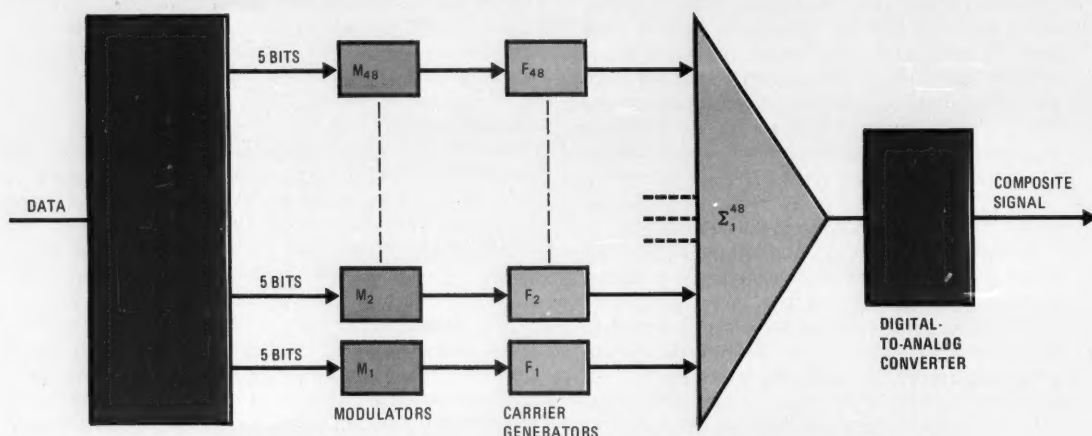
- Generation and modulation of multiple carrier signals, which appear as a single digital operation
- Filtering and demodulation of the received signal
- Control of input/output, including the operation of the optional 4-channel multiplexer, which allows other channel-and-bit combinations that, when multiplied, equal 9.6 kbits (for instance, 4 channels \times 2.4 kbits or 2 channels \times 4.8 kbits, and so on)
- Measurement and display of channel parameters and impairments

To change the setting for operating parameters such as request-to-send delay and clear-to-send delay or to change the multiplexer combinations, users can adjust the thumbwheel switches behind the hinged front panel of the modem. These switches replace the straps on the inside of conventional modems that controlled such settings. Measurement and diagnostic functions are set

1 Partitioned data stream



2 Generating a 40-baud signal



from behind the front panel.

The operating software controls the transmitter and the receiver, besides eliminating the need for an equalizer and performing line diagnostics. The transmitter program digitally generates 48 carrier frequencies, uniformly spaced between 500 and 2,800 Hz. Synchronous-series data is split into groups of 5 bits each. The corresponding phase and amplitude patterns are calculated for each group, and the carrier waves are modulated accordingly.

During the entire baud duration (25 milliseconds at 40 baud), these digital signals are continuously totaled, with the composite value applied to a digital-to-analog converter. The resulting analog signal requires only minimal shaping to conform to common carrier specifications for energy and spectral distribution.

Fourier transform methods

Figure 2 highlights the steps for generating the 40-baud signal. The numbers—40 baud \times 48 carriers \times 5 bits per carrier = 9.6 kbit/s—are one of several combinations that yield the desired low baud rate.

Figure 3 shows how the incoming signal is digitized. The processor performs all other operations numerically, using algorithms based on discrete Fourier transform techniques, which identify and analyze wave shapes. During the baud duration, hundreds of digital samples are multiplied by the sine and cosine functions for each carrier frequency. The resulting products are added to those accumulated from previous samples. This technique, known as "look up, multiply, and add," in effect acts as a software filter for the 48 carriers. It also extracts the data content implicit in the modulation. At the end of each baud duration, all 48 of the 5-bit data groups are reassembled into the received data stream. It is fundamental that the data in the transmitted signal remain the same throughout a baud. At the beginning of each baud, the modulation patterns for all carrier frequencies are simultaneously changed to represent new data for transmission. But because of envelope

delay, these new modulation patterns do not arrive simultaneously at the receiver.

Accounting for delay

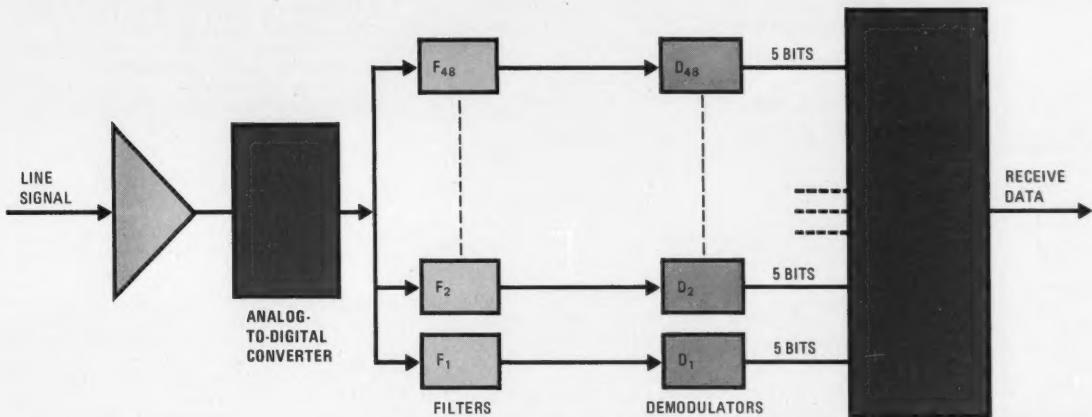
Each carrier experiences a different delay according to its frequency, with those carriers at 500 Hz and 2,800 Hz arriving 3 milliseconds later than those at the mid-band 1,650-Hz frequency. Yet each carrier is treated individually by the receiver, eliminating the need to restore the data to their original relationships. This in turn makes equalization unnecessary. At 40 baud, for instance, the 25-millisecond baud duration greatly exceeds the 3-millisecond delay, which is the worst delay usually encountered during equalization. Therefore, by waiting 3 milliseconds, until all carriers are present and stable, the modem prevents the different-delay effect, and demodulation can begin.

Checking line, channel conditions

The modem's operating program also controls its line-diagnostic role. The local-remote and digital-analog loopback tests are provided, of course, to aid in isolating basic channel or equipment failures. However, if these simple tests fail to identify subtler faults, the modem has additional diagnostic capabilities that shift into action without interrupting the data flow.

Despite the processing load imposed by the real-time performances of the transmitter and the receiver, the processor can run diagnostic programs concurrently with the usual modem operations. The received signal consists of multiple, uniformly spaced carrier frequencies, and the processor performs quantitative measurements of their line parameters. Such capabilities are usually found only in specialized test equipment, not in conventional modems. Checked and recorded regularly, these measurements aid maintenance personnel in spotting line degradations or noting sudden shifts from normal channel conditions. Scheduling tests is at an operator's discretion, but daily checks are suggested even when there are no apparent prob-

3 Digitizing an incoming signal



lems on the data communications network. ■

For more on data transmission equipment, see the following DATA COMMUNICATIONS articles.

1. "Understanding the fundamentals of line equalization," William J. Barksdale, May 1979, p. 107. Here is an introduction to equalization at a level that is suitable for the increasing number of technical management personnel involved in networking.
2. "The full-duplex, 2-wire story—Pick your modem,"

Ralph Glasgal, June 1979, p. 77. Although frequency-splitting techniques enable full-duplex operation over half-duplex lines, there are less expensive ways to get line-turnaround intelligence.

3. "Broadband technology magnifies local networking capability," Mark A. Dineson and J. J. Picazo, February 1980, p. 61. As data transmission equipment for a local network, broadband (or CATV) cable can support data rates up to 150 Mbit/s. It has almost 50 times the capacity of conventional coaxial cable.

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San Carlos, CA
Harris Corp Lightwave Communications Opm
Melbourne, FL
Hawaiian Telephone Co
Honolulu, HI
Hewlett-Packard Co
Palo Alto, CA
ITT-Electro/Optical
Roanoke, VA
Optical Information Systems
Elmsford, NY
Southern New England Telephone Co
New Haven, CT
Valtec Corp
West Boylston, MA
Versitron Inc
Washington, DC
Western Tele-Communications Inc
Denver, CO

LINE DRIVERS

ASTROCOM CORP
St Paul, MN **ADV PGS 66,86**
AVANTI COMMUNICATIONS CORP
Newport, RI **ADV PG 62**
CODEX CORPORATION
Mansfield, MA **ADV PGS 5,34-35**

DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT **ADV PG 64**
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**
EXPANDOR INC
Pittsburgh, PA **ADV PG 144**
GANDALF DATA INC
Wheeling, IL **ADV PG 70**
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY . . . **ADV PGS 152-153**
LEASING AND SERVICE
Schenectady, NY . . **ADV PGS 152-153**
INTERTEL INC
Andover, MA **ADV PG 87**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS**
Cover III, 37, 67
PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA **ADV PG 45**
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ **ADV PG 79**
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA . . **ADV PG Cover II**
Applied Delta Systems Inc
Bellmawr, NJ
Astrocom Corp
St Paul, MN
Avanti Communications Corp
Newport, RI
Bo-Sherrel Co
Poway, CA
Canoga Data Systems
Canoga Park, CA
Cermetek Microelectronics Inc
Sunnyvale, CA
Chess
Denver, CO
Cincinnati Electronics Corp
Cincinnati, OH
Codex Corporation
Mansfield, MA
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Data Set Cable Co Inc
Ridgefield, CT
David Jamison Carlyle Corp
Los Angeles, CA
DEI-Teleproducts
Escondido, CA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Electronic Interface Assoc Inc
New York, NY
ENA Datasystems Inc
Rexdale, ON
Ena Datasystems Inc
Rexdale, ON
Epic Data Corp
Richmond, BC
Expandor Inc
Pittsburgh, PA
Gandalf Data Inc
Wheeling, IL
General Datacomm Ind Inc
Danbury, CT
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA

For further catalog information, turn to
Update Service Card, page 201.

Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
International Data Sciences Inc
Lincoln, RI
Intertel Inc
Andover, MA
Kapusi Laboratories
San Mateo, CA
Micom Systems Inc
Chatsworth, CA
Modular Computer Systems
Fort Lauderdale, FL
Nu Data Corp
Little Silver, NJ
Prentice Corp
Sunnyvale, CA
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Southern New England Telephone Co
New Haven, CT
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Telecommunications Techniques Corp
Gaithersburg, MD
Teleprocessing Products Inc
Simi Valley, CA
Terminal Specialties Inc
Salt Lake City, UT
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Triton Engineering Inc
Gaithersburg, MD
United Data Services Co Inc
Phoenix, AZ
Ven-Tel Inc
Santa Clara, CA
Versitron Inc
Washington, DC
Via West
Phoenix, AZ

MICROWAVE/LASER SYSTEMS

Automatic Control Systems Inc
Macedonia, OH
Avantek
Santa Clara, CA
Cincinnati Electronics Corp
Cincinnati, OH
Control Laser Corp
Orlando, FL
LM Ericsson Telecommunications
Woodbury, NY
Farinon Electric
San Carlos, CA
General Telephone Co of the Northwest
Everett, WA
Hawaiian Telephone Co
Honolulu, HI
Singer Co
Librascope Div
Glendale, CA
Terracom
San Diego, CA
TRW Vidar
Sunnyvale, CA
Valtec Corp
West Boylston, MA
Western Multiplex Corp
Belmont, CA

INFRARED SYSTEMS

American Laser Systems Inc
Goleta, CA
Automatic Control Systems Inc
Macedonia, OH

Cincinnati Electronics Corp
Cincinnati, OH
Datapoint Corporation
San Antonio, TX
Dominick Tarricone
Commack, NY
General Optronics Corp
South Plainfield, NJ

FM SYSTEMS

Automatic Control Systems Inc
Macedonia, OH
Cincinnati Electronics Corp
Cincinnati, OH
Custom Terminals
Hauppauge, NY
Sangamo Weston Data System Div
Sarasota, FL
SCI Systems Inc
Huntsville, AL
Valtec Corp
West Boylston, MA

MODEMS, LIMITED DISTANCE

ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 68**

ASTROCOM CORP
St Paul, MN **ADV PGS 66,86**

AVANTI COMMUNICATIONS CORP
Newport, RI **ADV PG 62**

CODEX CORPORATION
Mansfield, MA **ADV PGS 5,34-35**

DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT **ADV PG 64**

DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**

DYNATECH DATA SYSTEMS
Springfield, VA **ADV PG 84**

EXPANDOR INC
Pittsburgh, PA **ADV PG 144**

GANDOLF DATA INC
Wheeling, IL **ADV PG 70**

GENERAL DATACOMM IND INC
Danbury, CT **ADV PG 63**

GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY **ADV PGS 152-153**

INTERTEL INC
Andover, MA **ADV PG 87**

MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS**
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RACAL-MILGO
Miami, FL **ADV PGS 30-31**

RIXON INC
Silver Spring, MD **ADV PG 32**

SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ **ADV PG 79**

TIMEPLEX INC
Rochelle Park, NJ **ADV PG 40**

TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA **ADV PG Cover II**

Amdax Corp
Bohemia, NY
American Used Computer Co
Boston, MA
ARK Electronic Products
Melbourne, FL
Astrocom Corp
St Paul, MN
AT&T
Morris Plains, NJ
Avanti Communications Corp
Newport, RI

Bo-Sherrel Co
Poway, CA
Boston Financial & Equity Corp
Boston, MA
W A Brown Instruments
Orlando, FL
C & L Terminals Inc
Portland, OR
Canoga Data Systems
Canoga Park, CA
Cermetek Microelectronics Inc
Sunnyvale, CA
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Computer Datacom Inc
Irvine, CA
Computrol Corp
Ridgefield, CT
CSS Telecommunications
Mountain View, CA
Custom Terminals
Hauppauge, NY
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Dataproducts New England
Wallingford, CT
Data Rentals/Sales Inc
Culver City, CA
Data Set Cable Co Inc
Ridgefield, CT
David Jamison Carlyle Corp
Los Angeles, CA
DEI-Teleproducts
Escondido, CA
Develcon Electronics Inc
Doylestown, PA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Dynatech Data Systems
Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
ENA Datasystems Inc
Rexdale, ON
E-Systems Inc
Garland Div
Garland, TX
Expander Inc
Pittsburgh, PA
Gandalf Data Inc
Wheeling, IL
General Datacomm Ind Inc
Danbury, CT
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Company of Indiana Inc
Fort Wayne, IN
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
General Telephone Co of Wisconsin
Sun Prairie, WI
Hawaiian Telephone Co
Honolulu, HI
Hewlett-Packard Co
Palo Alto, CA
Interactive Systems/3M
Ann Arbor, MI
International Data Sciences Inc
Lincoln, RI

Intertel Inc
Andover, MA
CD Johnson/Assoc Ltd
Ottawa, ON
Kapusi Laboratories
San Mateo, CA
Leasametric
Foster City, CA
Linkabit Corporation
San Diego, CA
Madzar Corp
Fremont, CA
Micom Systems Inc
Chatsworth, CA
Modtech Inc
Livermore, CA
MTI Sales Corp
Great Neck, NY
NCR Comten Inc
St Paul, MN
NCR Corp
Dayton, OH
New England Telephone & Telegraph Co
Boston, MA
New Jersey Bell Telephone Co
Newark, NJ
Nuclear Engineering Services Co
Sunnyvale, CA
Nu Data Corp
Little Silver, NJ
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Periphonics Corp
Bohemia, NY
Precision Communications Services Inc
Tampa, FL
Prentice Corp
Sunnyvale, CA
Racal-Milgo
Miami, FL
Rental Electronics Inc
Palo Alto, CA
Rixon Inc
Silver Spring, MD
Southern New England Telephone Co
New Haven, CT
Southern Telephone Supply
Atlanta, GA
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Tek-Com
San Jose, CA
Terminal Data Corp
Rockville, MD
Terminal Specialties Inc
Salt Lake City, UT
Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Ven-Tel Inc
Santa Clara, CA
Versitron Inc
Washington, DC

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page 201.

MODEMS, MULTIPOINT

ASTROCOM CORP
St Paul, MN **ADV PGS 66,86**

AVANTI COMMUNICATIONS CORP
Newport, RI **ADV PG 62**

CODEX CORPORATIONMansfield, MA **ADV PGS 5,34-35****DATA CONTROL SYSTEMS****DIV OF GENERAL INDICATOR CORP**Danbury, CT **ADV PG 64****GANDALF DATA INC**Wheeling, IL **ADV PG 70****GENERAL DATACOMM IND INC**Danbury, CT **ADV PG 63****INTERTEL INC**Andover, MA **ADV PG 87****MICOM SYSTEMS INC**Chatsworth, CA **ADV PGS**

Cover III, 37, 67

MULTI-TECH SYSTEMS INCNew Brighton, MN . . . **ADV PGS 58-59****RACAL-MILGO**Miami, FL **ADV PGS 30-31****RACAL-VADIC INC**Sunnyvale, CA **ADV PGS 60-61****RIXON INC**Silver Spring, MD **ADV PG 32****TIMEPLEX INC**Rochelle Park, NJ **ADV PG 40****UNIVERSAL DATA SYSTEMS INC**Huntsville, AL **ADV PG Cover IV**

Anderson Jacobson

San Jose, CA

Astrocom Corp

St Paul, MN

AT&T

Morris Plains, NJ

Avanti Communications Corp

Newport, RI

Chess

Denver, CO

Cincinnati Bell

Cincinnati, OH

Codex Corporation

Mansfield, MA

ComData Corp

Skokie, IL

Commtext Inc

Crofton, MD

Computer Datacom Inc

Irvine, CA

Continental Resources Inc

Bedford, MA

CSS Telecommunications

Mountain View, CA

Data Control Systems

Div of General Indicator Corp

Danbury, CT

David Jamison Carlyle Corp

Los Angeles, CA

DEI-Teleproducts

Escondido, CA

Electronic Interface Assoc Inc

New York, NY

ENA Datasystems Inc

Rexdale, ON

E-Systems Inc

Garland Div

Garland, TX

Gandalf Data Inc

Wheeling, IL

General Datacomm Ind Inc

Danbury, CT

General Telephone Company of Indiana Inc

Fort Wayne, IN

General Telephone Co of Kentucky

Lexington, KY

General Telephone Co of the Northwest

Everett, WA

General Telephone Co of Wisconsin

Sun Prairie, WI

Hawaiian Telephone Co

Honolulu, HI

Interactive Systems/3M

Ann Arbor, MI

Intel Inc

Andover, MA

CD Johnson/Assoc Ltd

Ottawa, ON

Leasametric

Foster City, CA

Linkabit Corporation

San Diego, CA

Livermore Data Systems Inc

Livermore, CA

Micom Systems Inc

Chatsworth, CA

Modtech Inc

Livermore, CA

Multi-Tech Systems Inc

New Brighton, MN

NCR Corp

Dayton, OH

New England Telephone & Telegraph Co

Boston, MA

New Jersey Bell Telephone Co

Newark, NJ

Nuclear Engineering Services Co

Sunnyvale, CA

Paradyne Corp

Largo, FL

Penril Corp

Data Communications Div

Rockville, MD

Precision Communications Services Inc

Tampa, FL

Prentice Corp

Sunnyvale, CA

Racal-Milgo

Miami, FL

Racal-Vadic Inc

Sunnyvale, CA

RCA Global Communications Inc

New York, NY

Rental Electronics Inc

Palo Alto, CA

Rixon Inc

Silver Spring, MD

Southern New England Telephone Co

New Haven, CT

Sperry Univac

Blue Bell, PA

Tek-Com

San Jose, CA

Terminal Specialties Inc

Salt Lake City, UT

Timeplex Inc

Rochelle Park, NJ

Universal Data Systems Inc

Huntsville, AL

Vardon & Associates

Irving, TX

Ven-Tel Inc

Santa Clara, CA

MODEMS, MULTIPOINT**AVANTI COMMUNICATIONS CORP**Newport, RI **ADV PG 62****GANDALF DATA INC**Wheeling, IL **ADV PG 70****GENERAL DATACOMM IND INC**Danbury, CT **ADV PG 63****INTERTEL INC**Andover, MA **ADV PG 87****MICOM SYSTEMS INC**Chatsworth, CA **ADV PGS**

Cover III, 37, 67

RACAL-MILGOMiami, FL **ADV PGS 30-31****RIXON INC**Silver Spring, MD **ADV PG 32****TIMEPLEX INC**Rochelle Park, NJ **ADV PG 40****UNIVERSAL DATA SYSTEMS INC**Huntsville, AL **ADV PG Cover IV**

AT&T

Morris Plains, NJ

Avanti Communications Corp

Newport, RI

C & L Terminals Inc

Portland, OR

Chess

Denver, CO

Cincinnati Bell

Cincinnati, OH

ComData Corp

Skokie, IL

Continental Resources Inc

Bedford, MA

Datapoint Corporation

San Antonio, TX

David Jamison Carlyle Corp

Los Angeles, CA

DEI-Teleproducts

Escondido, CA

Electronic Interface Assoc Inc

New York, NY

ENA Datasystems Inc

Rexdale, ON

E-Systems Inc

Garland Div

Garland, TX

Frederick Electronics Corp

Frederick, MD

Gandalf Data Inc

Wheeling, IL

General Datacomm Ind Inc

Danbury, CT

General Telephone Company of Indiana Inc

Fort Wayne, IN

General Telephone Co of Kentucky

Lexington, KY

Hawaiian Telephone Co

Honolulu, HI

Infolink Data Communications

San Diego, CA

Interactive Systems/3M

Ann Arbor, MI

Intel Inc

Andover, MA

CD Johnson/Assoc Ltd

Ottawa, ON

Leasametric

Foster City, CA

Livermore Data Systems Inc

Livermore, CA

Micom Systems Inc

Chatsworth, CA

MTI Sales Corp

Great Neck, NY

Nuclear Engineering Services Co

Sunnyvale, CA

Paradyne Corp

Largo, FL

Penril Corp

Data Communications Div

Rockville, MD

Racal-Milgo

Miami, FL

RCA Global Communications Inc

New York, NY

Rental Electronics Inc

Palo Alto, CA

Rixon Inc

Silver Spring, MD

Southern New England Telephone Co

New Haven, CT

Sperry Univac

Blue Bell, PA

Tek-Com

San Jose, CA

Terminal Specialties Inc

Salt Lake City, UT

Timeplex Inc

Rochelle Park, NJ

Universal Data Systems Inc

Huntsville, AL

MODEMS, VOICE-GRADE, LOW-SPEED (0-1,200 B/S)

ALANTHUS DATA COMMUNICATIONS CORP
Rockville, MD **ADV PG 32B**

ASTROCOM CORP
St Paul, MN **ADV PGS 66,86**

BIZCOMP CORPORATION
Menlo Park, CA **ADV PG 69**

CODEX CORPORATION
Mansfield, MA **ADV PGS 5,34-35**

DATA ACCESS SYSTEMS INC
Blackwood, NJ **ADV PG 123**

EXPANDOR INC
Pittsburgh, PA **ADV PG 144**

GANDALF DATA INC
Wheeling, IL **ADV PG 70**

GENERAL DATACOMM IND INC
Danbury, CT **ADV PG 63**

GENERAL ELECTRIC CO/COMMUNICATION EQUIPMENT LEASING AND SERVICE
Schenectady, NY **ADV PGS 152-153**

INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ **ADV PG 39**

INTERTEL INC
Andover, MA **ADV PG 87**

MULTI-TECH SYSTEMS INC
New Brighton, MN **ADV PGS 58-59**

PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA **ADV PG 45**

RACAL-MILGO
Miami, FL **ADV PGS 30-31**

RACAL-VADIC INC
Sunnyvale, CA **ADV PGS 60-61**

RIXON INC
Silver Spring, MD **ADV PG 32**

TIMEPLEX INC
Rochelle Park, NJ **ADV PG 40**

UNIVERSAL DATA SYSTEMS INC
Huntsville, AL **ADV PG Cover IV**

Acro Corporation
Irvine, CA

Alanthus Data Communications Corp
Rockville, MD

American Terminal Leasing Co
Boston, MA

American Used Computer Co
Boston, MA

Anderson Jacobson
San Jose, CA

Astrocom Corp
St Paul, MN

AT&T
Morris Plains, NJ

Bizcomp Corporation
Menlo Park, CA

Boston Financial & Equity Corp
Boston, MA

W A Brown Instruments
Orlando, FL

C & L Terminals Inc
Portland, OR

Carterfone Communications Corp
Dallas, TX

Cermetek Microelectronics Inc
Sunnyvale, CA

Chess
Denver, CO

Cincinnati Bell
Cincinnati, OH

CMC Marketing Corp
Houston, TX

Codex Corporation
Mansfield, MA

Coherent Communications
Hauppauge, NY

ComData Corp
Skokie, IL

Computer Datacom Inc
Irvine, CA

Continental Resources Inc
Bedford, MA

CSS Telecommunications
Mountain View, CA

Data Access Systems Inc
Blackwood, NJ

Data Dimensions Inc
Norwalk, CT

Data Equipment Inc
Sunnyvale, CA

Datapoint Corporation
San Antonio, TX

Dataproducts New England
Wallingford, CT

Data Rentals/Sales Inc
Culver City, CA

Datex Inc
Carrboro, NC

David Jamison Carlyle Corp
Los Angeles, CA

DEI-Teleproducts
Escondido, CA

Develcon Electronics Inc
Doylestown, PA

Digicom Data Products Inc
San Jose, CA

Electronic Interface Assoc Inc
New York, NY

Electro Rent
Burbank, CA

ENA Datasystems Inc
Rexdale, ON

LM Ericsson Telecommunications
Woodbury, NY

E-Systems Inc
ECI Div.

St. Petersburg, FL

E-Systems Inc
Garland Div

Garland, TX

Expandor Inc
Pittsburgh, PA

Ford Aerospace and Communications Corp
Western Development Lab Div

Palo Alto, CA

Frederick Electronics Corp
Frederick, MD

Gandalf Data Inc
Wheeling, IL

General Datacomm Ind Inc
Danbury, CT

General Electric Co/Communication Equipment Leasing and Service
Schenectady, NY

General Telephone Company of Indiana Inc
Fort Wayne, IN

General Telephone Co of Kentucky
Lexington, KY

General Telephone Co of the Northwest
Everett, WA

GTE Lenkurt Inc
San Carlos, CA

Harris-Darconz
Albuquerque, NM

Hawaiian Telephone Co
Honolulu, HI

Hewlett-Packard Co
Palo Alto, CA

Hydri Control Systems Div
Houston, TX

Infolink Data Communications
San Diego, CA

Infotron Systems Corporation
Cherry Hill, NJ

Inmac
Santa Clara, CA

Interactive Systems/3M
Ann Arbor, MI

Intertel Inc
Andover, MA

Leasametric
Foster City, CA

Livermore Data Systems Inc
Livermore, CA

Micon Industries
Oakland, CA

Modtech Inc
Livermore, CA

MTI Sales Corp
Great Neck, NY

Multi-Tech Systems Inc
New Brighton, MN

NCR Comten Inc
St Paul, MN

NCR Corp
Dayton, OH

New England Telephone & Telegraph Co
Boston, MA

New Jersey Bell Telephone Co
Newark, NJ

Novation Inc
Tarzana, CA

Nuclear Engineering Services Co
Sunnyvale, CA

Nu Data Corp
Little Silver, NJ

Omnitex Data
Phoenix, AZ

Penril Corp
Data Communications Div

Rockville, MD

Periphonics Corp
Bohemia, NY

Plantronics/Santa Cruz
Santa Cruz, CA

Prentice Corp
Sunnyvale, CA

Pulsecom Div/Harvey Hubbell
Falls Church, VA

QEI Inc
Springfield, NJ

Racal-Milgo
Miami, FL

Racal-Vadic Inc
Sunnyvale, CA

RCA Global Communications Inc
New York, NY

Rental Electronics Inc
Palo Alto, CA

Rixon Inc
Silver Spring, MD

Rockwell International
Electronic Devices Div

Anaheim, CA

Source-Of-The-South (SOS)
Montgomery, AL

Southern New England Telephone Co
New Haven, CT

Southern Telephone Supply
Atlanta, GA

Sperry Univac
Blue Bell, PA

Tab Products Co
Palo Alto, CA

Tek-Com
San Jose, CA

Tektronix Inc
Beaverton, OR

Tele-Signal Corp
Hauppauge, NY

Tel-Tex Inc
Houston, TX

Teltone Corp
Kirkland, WA

Terminal Data Corp
Rockville, MD

Want to receive announcements of new products?
Turn to **Update Service Card**,
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Terminal Specialties Inc
Salt Lake City, UT
Timeplex Inc
Rochelle Park, NJ
Transcom Inc
Sub of HI-G Inc
Windsor Locks, CT
Universal Data Systems Inc
Huntsville, AL
Vardon & Associates
Irving, TX
Ven-Tel Inc
Santa Clara, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

MODEMS, VOICE-GRADE, MEDIUM SPEED (1,800-3,600 B/S)

AVANTI COMMUNICATIONS CORP
Newport, RI ADV PG 62
CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
GANDALF DATA INC
Wheeling, IL ADV PG 70
GENERAL DATACOMM IND INC
Danbury, CT ADV PG 63
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY ADV PGS 152-153
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ ADV PG 39
INTERTEL INC
Andover, MA ADV PG 87
MICOM SYSTEMS INC
Chatsworth, CA ADV PGS
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MULTI-TECH SYSTEMS INC
New Brighton, MN ADV PGS 58-59
RACAL-MILGO
Miami, FL ADV PGS 30-31
RACAL-VADIC INC
Sunnyvale, CA ADV PGS 60-61
RIXON INC
Silver Spring, MD ADV PG 32
TIMEPLEX INC
Rochelle Park, NJ ADV PG 40
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL ADV PG Cover IV
Anderson Jacobson
San Jose, CA
AT&T
Morris Plains, NJ
Avanti Communications Corp
Newport, RI
Billings Computer Corporation
Provo, UT
W A Brown Instruments
Orlando, FL
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
CMC Marketing Corp
Houston, TX
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Computer Datacom Inc
Irvine, CA
Continental Resources Inc
Bedford, MA
CSS Telecommunications
Mountain View, CA
Data Dimensions Inc
Norwalk, CT
Datec Inc
Carrboro, NC

David Jamison Carlyle Corp
Los Angeles, CA
DEI-Teleproducts
Escondido, CA
Electronic Interface Assoc Inc
New York, NY
ENA Datasystems Inc
Rexdale, ON
LM Ericsson Telecommunications
Woodbury, NY
E-Systems Inc.
ECI Div.
St. Petersburg, FL
E-Systems Inc
Garland Div
Garland, TX
Gandalf Data Inc
Wheeling, IL
General Datacomm Ind Inc
Danbury, CT
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Company of Indiana Inc
Fort Wayne, IN
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
GTE Lenkurt Inc
San Carlos, CA
Hawaiian Telephone Co
Honolulu, HI
Infotron Systems Corporation
Cherry Hill, NJ
Interactive Systems/3M
Ann Arbor, MI
Intertel Inc
Andover, MA
Leasametric
Foster City, CA
Livermore Data Systems Inc
Livermore, CA
Micom Systems Inc
Chatsworth, CA
MTI Sales Corp
Great Neck, NY
Multi-Tech Systems Inc
New Brighton, MN
NCR Comten Inc
St Paul, MN
NCR Corp
Dayton, OH
New England Telephone & Telegraph Co
Boston, MA
New Jersey Bell Telephone Co
Newark, NJ
Nuclear Engineering Services Co
Sunnyvale, CA
Omnitec Data
Phoenix, AZ
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Precision Communications Services Inc
Tampa, FL
Prentice Corp
Sunnyvale, CA
Racal-Milgo
Miami, FL
Racal-Vadic Inc
Sunnyvale, CA
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Rockwell International
Electronic Devices Div
Anaheim, CA
Source-Of-The-South (SOS)
Montgomery, AL

Southern New England Telephone Co
New Haven, CT
Southern Telephone Supply
Atlanta, GA
Tab Products Co
Palo Alto, CA
Tele-Signal Corp
Hauppauge, NY
Tel-Tex Inc
Houston, TX
Teltone Corp
Kirkland, WA
Timeplex Inc
Rochelle Park, NJ
Universal Data Systems Inc
Huntsville, AL
Vardon & Associates
Irving, TX
Ven-Tel Inc
Santa Clara, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

MODEMS, VOICE-GRADE, HIGH-SPEED (4,800-9,600 B/S)

AVANTI COMMUNICATIONS CORP
Newport, RI ADV PG 62
CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
GANDALF DATA INC
Wheeling, IL ADV PG 70
GENERAL DATACOMM IND INC
Danbury, CT ADV PG 63
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY ADV PGS 152-153
INFOTRON SYSTEMS CORPORATION
Cherry Hill, NJ ADV PG 39
INTERTEL INC
Andover, MA ADV PG 87
MICOM SYSTEMS INC
Chatsworth, CA ADV PGS
Cover III, 37, 67
RACAL-MILGO
Miami, FL ADV PGS 30-31
RIXON INC
Silver Spring, MD ADV PG 32
TIMEPLEX INC
Rochelle Park, NJ ADV PG 40
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL ADV PG Cover IV
Anderson Jacobson
San Jose, CA
Applied Delta Systems Inc
Bellmawr, NJ
AT&T
Morris Plains, NJ
Avanti Communications Corp
Newport, RI
W A Brown Instruments
Orlando, FL
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
CMC Marketing Corp
Houston, TX
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Continental Resources Inc
Bedford, MA
CSS Telecommunications
Mountain View, CA
Data Dimensions Inc
Norwalk, CT

David Jamison Carlyle Corp
Los Angeles, CA
Electronic Interface Assoc Inc
New York, NY
ENA Datasystems Inc
Rexdale, ON
LM Ericsson Telecommunications
Woodbury, NY
E-Systems Inc.
ECI Div.
St. Petersburg, FL
E-Systems Inc
Garland Div
Garland, TX
Gandalf Data Inc
Wheeling, IL
General Datacomm Ind Inc
Danbury, CT
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Company of Indiana Inc
Fort Wayne, IN
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
GTE Lenkurt Inc
San Carlos, CA
Hawaiian Telephone Co
Honolulu, HI
Infotron Systems Corporation
Cherry Hill, NJ
Interactive Systems/3M
Ann Arbor, MI
Intertel Inc
Andover, MA
Leasametric
Foster City, CA
Livermore Data Systems Inc
Livermore, CA
Micom Systems Inc
Chatsworth, CA
Microform Data Systems Inc
Mountain View, CA
MTI Sales Corp
Great Neck, NY
New England Telephone & Telegraph Co
Boston, MA
New Jersey Bell Telephone Co
Newark, NJ
Nuclear Engineering Services Co
Sunnyvale, CA
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Precision Communications Services Inc
Tampa, FL
Racal-Milgo
Miami, FL
RCA Global Communications Inc
New York, NY
Rixon Inc
Silver Spring, MD
Rockwell International
Electronic Devices Div
Anaheim, CA
Source-Of-The-South (SOS)
Montgomery, AL
Southern New England Telephone Co
New Haven, CT
Southern Telephone Supply
Atlanta, GA
Sperry Univac
Blue Bell, PA
Tab Products Co
Palo Alto, CA
Tel-Tex Inc
Houston, TX
Teltone Corp
Kirkland, WA

Timeplex Inc
Rochelle Park, NJ
Universal Data Systems Inc
Huntsville, AL
The Western Union Telegraph Co
Upper Saddle River, NJ

MODEMS, BROADBAND, HALF-GROUP (TO 19.2 KB/S)

AVANTI COMMUNICATIONS CORP
Newport, RI ADV PG 62
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT ADV PG 64
GANDALF DATA INC
Wheeling, IL ADV PG 70
Amdax Corp
Bohemia, NY
AT&T
Morris Plains, NJ
Avanti Communications Corp
Newport, RI
W A Brown Instruments
Orlando, FL
Canoga Data Systems
Canoga Park, CA
Cincinnati Bell
Cincinnati, OH
Data Control Systems
Div of General Indicator Corp
Danbury, CT
David Jamison Carlyle Corp
Los Angeles, CA
Electronic Interface Assoc Inc
New York, NY
ENA Datasystems Inc
Rexdale, ON
Gandalf Data Inc
Wheeling, IL
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
Interactive Systems/3M
Ann Arbor, MI
CD Johnson/Assoc Ltd
Ottawa, ON
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Southern New England Telephone Co
New Haven, CT

MODEMS, BROADBAND GROUP (TO 50 KB/S)

AVANTI COMMUNICATIONS CORP
Newport, RI ADV PG 62
CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT ADV PG 64
DIGITAL COMMUNICATIONS CORP
DIV MA/COM
Germantown, MD ADV PG 43
GANDALF DATA INC
Wheeling, IL ADV PG 70
Amdax Corp
Bohemia, NY
AT&T
Morris Plains, NJ
Avanti Communications Corp
Newport, RI

Belden Corp
Geneva, IL
Canoga Data Systems
Canoga Park, CA
Cincinnati Bell
Cincinnati, OH
Codex Corporation
Mansfield, MA
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Digital Communications Corp
Div MA/Com
Germantown, MD
Electronic Interface Assoc Inc
New York, NY
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Gandalf Data Inc
Wheeling, IL
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
GTE Lenkurt Inc
San Carlos, CA
Hawaiian Telephone Co
Honolulu, HI
Interactive Systems/3M
Ann Arbor, MI
CD Johnson/Assoc Ltd
Ottawa, ON
Microform Data Systems Inc
Mountain View, CA
Nuclear Engineering Services Co
Sunnyvale, CA
Paradyne Corp
Largo, FL
Penril Corp
Data Communications Div
Rockville, MD
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Stanford Telecommunications Inc
Sunnyvale, CA
Western Multiplex Corp
Belmont, CA

MODEMS, BROADBAND, SUPER-GROUP (TO 230.4 KB/S)

AVANTI COMMUNICATIONS CORP
Newport, RI ADV PG 62
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT ADV PG 64
DIGITAL COMMUNICATIONS CORP
DIV MA/COM
Germantown, MD ADV PG 43
GANDALF DATA INC
Wheeling, IL ADV PG 70
AT&T
Morris Plains, NJ
Avanti Communications Corp
Newport, RI
Canoga Data Systems
Canoga Park, CA
Computrol Corp
Ridgefield, CT
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Digital Communications Corp
Div MA/Com
Germantown, MD
Electronic Interface Assoc Inc
New York, NY

Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Gandalf Data Inc
Wheeling, IL
General Telephone Co of the Northwest
Everett, WA
Linkabit Corporation
a Ma/Com Company
San Diego, CA
Nuclear Engineering Services Co
Sunnyvale, CA
Penril Corp
Data Communications Div
Rockville, MD
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Stanford Telecommunications Inc
Sunnyvale, CA
Valtec Corp
West Boylston, MA
Western Multiplex Corp
Belmont, CA

MODEM ELIMINATORS

ARK ELECTRONIC PRODUCTS

Melbourne, FL ADV PG 68

ASTROCOM CORP

St Paul, MN ADV PGS 66,86

AVANTI COMMUNICATIONS CORP

Newport, RI ADV PG 62

COMPRE COMM INC

Champaign, IL ADV PG 44

DATA CONTROL SYSTEMS

DIV OF GENERAL INDICATOR CORP

Danbury, CT ADV PG 64

DIGILOG SYSTEMS INC

NETWORK CONTROL DIV

Horsham, PA ADV PG 81

DYNATECH DATA SYSTEMS

Springfield, VA ADV PG 84

EXPANDOR INC

Pittsburgh, PA ADV PG 144

GANDALF DATA INC

Wheeling, IL ADV PG 70

MICOM SYSTEMS INC

Chatsworth, CA ADV PGS

Cover III, 37, 67

SPECTRON, A DIV OF NORTHERN

TELECOM INC

Moorestown, NJ ADV PG 79

TRAN TELECOMMUNICATIONS CORP

A SUB OF AMDAHL CORP

Marina del Rey, CA ADV PG Cover II

UNIVERSAL DATA SYSTEMS INC

Huntsville, AL ADV PG Cover IV

Applied Delta Systems Inc

Belmawr, NJ

ARK Electronic Products

Melbourne, FL

Astrocom Corp

St Paul, MN

Avanti Communications Corp

Newport, RI

Cambridge Telecommunications

Burlington, MA

Canoga Data Systems

Canoga Park, CA

Chess

Denver, CO

Com/Tech Systems

New York, NY

Compre Comm Inc
Champaign, IL
Custom Terminals
Hauppauge, NY
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Data Dimensions Inc
Norwalk, CT
Data Set Cable Co Inc
Ridgefield, CT
David Jamison Carlyle Corp
Los Angeles, CA
DEI-Teleproducts
Escondido, CA
Develcon Electronics Inc
Doylestown, PA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Dynatech Data Systems
Springfield, VA
Electrodata Inc
Bedford Heights, OH
Electronic Interface Assoc Inc
New York, NY
Expandor Inc
Pittsburgh, PA
Gandalf Data Inc
Wheeling, IL
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Honeywell Information Systems
Waltham, MA
Infolink Data Communications
San Diego, CA
Inmac
Santa Clara, CA
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Lincoln, RI
Leasametric
Foster City, CA
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Livermore, CA
NCR Corp
Dayton, OH
Peripherals Corp
Bohemia, NY
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Moorestown, NJ
Sperry Univac, MCO
Irvine, CA
Teleprocessing Products Inc
Simi Valley, CA
Terminal Data Corp
Rockville, MD
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
United Data Services Co Inc
Phoenix, AZ

Universal Data Systems Inc
Huntsville, AL
Valtec Corp
West Boylston, MA
Ven-Tel Inc
Santa Clara, CA
Versitron Inc
Washington, DC
Vertex Electronics Inc
Farmingdale, NY

MIL 188C ADAPTERS

CODEX CORPORATION

Mansfield, MA ADV PGS 5,34-35

INTERTEL INC

Andover, MA ADV PG 87

PULSECOM DIV/HARVEY HUBBELL

Falls Church, VA ADV PG 45

RACAL-MILGO

Miami, FL ADV PGS 30-31

Applied Delta Systems Inc

Bellmawr, NJ

Canoga Data Systems

Canoga Park, CA

Codex Corporation

Mansfield, MA

Custom Terminals

Hauppauge, NY

Dataproducs New England

Wallingford, CT

DEI-Teleproducts

Escondido, CA

Epicom Inc

Altamonte Springs, FL

General Telephone Co of the Northwest

Everett, WA

GTE Lenkurt Inc

San Carlos, CA

Hawaiian Telephone Co

Honolulu, HI

Hetra Computer & Communications

Industries Inc

Melbourne, FL

Intel Inc

Andover, MA

Paradyne Corp

Largo, FL

Penril Corp

Data Communications Div

Rockville, MD

Pulsecom Div/Harvey Hubbell

Falls Church, VA

Racal-Milgo

Miami, FL

Telecommunications Techniques Corp

Gaithersburg, MD

Tele-Signal Corp

Hauppauge, NY

Versitron Inc

Washington, DC

PARALLEL LINE EXTENDERS

Canoga Data Systems
Canoga Park, CA
Compression Labs Inc
Cupertino, CA
Custom Terminals
Hauppauge, NY
DEI-Teleproducts
Escondido, CA
Teleprocessing Products Inc
Simi Valley, CA

Stay up-to-date with new catalog information and new product announcements. Turn to **Update Service Card, page 201.**

MULTI-TECH

103, 202 and 212A COMPATIBLE MODEMS, ACOUSTIC COUPLERS, DAA's and TEST GEAR, REASONABLY PRICED AND WITH QUALITY YOU CAN RELY ON.

The FM30 acoustic data coupler below is one of our many 103-compatible 300 bps modems. Crystal-controlled circuits, a rugged construction and a superior cup design make the FM30 the best coupler on the market. FCC registered stand-alone and rack-mount modems are also available in original and auto-answer modes.

If you're like most remote site 212A users, you're operating your modem in the high speed modem only. Yet you're paying a high price for both 1200 and 300 bps, because you've really had no choice.



FM30 ACOUSTIC
COUPLER

MULTI-TECH SYSTEMS, INC.

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MODEMS...

You have a choice with Multi-Tech. Our MT212D modem operates at 1200 bps, full-duplex, and is compatible with other 212A's at that speed. Our MT212A provides both 1200 and 300 bps capability, and can be used as a full 212A replacement. Both the MT212D and the MT212A feature a unique call-originating configuration which permits the use of a standard telephone set, without special switches, jacks and adaptors.

The MT212D, with its single speed and call-origination capabilities, is available at a price far below that of the dual-speed 212A's now on the market. Take advantage of our choice.



MT212D
DATA MODEM

MULTI-TECH SYSTEMS, INC.

82 SECOND AVENUE S.E. • NEW BRIGHTON, MINNESOTA 55112 • (612) 631-3550 • TWX 910-563-3610

Racal-Vadic presents

1.

The VA3450 Series of Direct-Connect, Originate/Answer Triple Modems are specifically designed for remote terminal users. They combine a Racal-Vadic VA3400 (1200 bps full duplex modem), a Bell 212A (1200 bps full duplex modem), and a Bell 103/113 (300 bps full duplex modem) in a compact low profile stand-alone cabinet. Installing a VA3450 at remote locations, and a VA3467 Triple Modem at central computer sites, enables users to standardize on Racal-Vadic and satisfy every switched network full duplex requirement from 0 to 1200 bps.

A Triple Modem for Remote Terminal Users



3.

The world's first dual acoustic coupler, the VA3413, is fully compatible with Racal-Vadic's VA3400 and Bell 103/113 type modems. Now, a single portable coupler can handle virtually all originate applications for full duplex 1200 bps and 0-300 bps data transmission over the dial-up telephone network. Two couplers in one, with automatic detection of the called modem, so the user does not have to manually select the originate mode.

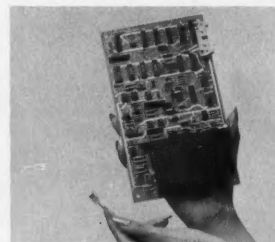
A Dual Acoustic Coupler— Full Duplex at 1200 bps and 0-300 bps



5.

Racal-Vadic now has an expanding series of low cost, FCC Registered Direct-Connect "Modems On A Card," small enough to mount inside of CRT displays, teleprinters, POS devices, and other terminals and systems. The VS300P is a 300 bps full duplex Bell 103/113 compatible modem, while the VS1200P is a 1200 bps full duplex Bell 202C/S compatible modem. Both modems have automatic originate/answer capabilities. The compact modems are built on a 5" by 8.35" card and require less than 42 square inches of space.

For OEM's, 300 bps and 1200 bps Modem Cards Small Enough to Fit Inside of Terminals

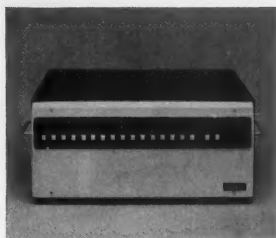


Racal-Vadic 222 Caspian Drive, Sunnyvale, CA 94086 • Tel: (408) 744-0810 • TWX: 910-339-9297

RACAL
The Electronics Group

Modems for the 1980s

2.



The VA3467 Series of Direct-Connect, Answer Only Triple Modems, with built-in microprocessor, automatically changes into a VA3400, a Bell 212A, or a Bell 103, depending on which remote modem is calling. Benefits are many: Remote users can dial a single phone number regardless of whether the calling modem is a VA3400, a 212A or a 103. This means a single computer port can service most remote terminals, eliminating the need for split rotaries. Up to 48 Triple Modems can be housed in a single 7-foot high cabinet.

A Triple Modem for Central Computer Sites

4.



Another amazing new product from Racal-Vadic. It's the ModemPhone, a switched network 300 bps full duplex Bell 103/113 compatible modem housed inside a standard telephone. The modem is invisible. Users merely have to plug the ModemPhone, with its built-in, direct-connect, originate/answer modem, into a standard telephone company voice or data jack, connect the data terminal (an RS232C interface is provided), and start communicating, be it voice or data.

Introducing the Modem-Phone, with the Invisible Modem

6.



Racal-Vadic's new "50" Series of stand-alone modems has been specifically designed for remote terminal users. All modems in this series have been registered for direct connection to the switched network under FCC Rules, Part 68.

The highly styled, low profile "50" package is designed to fit into modern office environments, and is compatible with any color scheme. Less space is required, too, because the telephone can sit on top of the modem, or in multiple operations, modems can be stacked without developing a heat problem.

Low Profile "50" Series Modems for Remote Terminal Use

Regional Offices: EAST • 4720-J Boston Way, Lanham, MD 20801 • (301) 459-7430
 NORTHEAST • 16 Lakeside Office Park, Wakefield, MA 01880 • (617) 245-8790
 CENTRAL • 18W100 22nd Street, Suite 124, Oakbrook Terrace, IL 60181 • (312) 932-9268
 WEST • 222 Caspian Drive, Sunnyvale, CA 94086 • (408) 744-0810
 SOUTHWEST • 2715 Avenue E East, Suite 618, Arlington, TX 76011 • (817) 277-2246

If you were Sherlock Holmes, we'd be your Dr. Watson.

The unfailingly dependable Dr. Watson.

Loyal, trusty, he always managed to be there when Holmes really needed him.

Which, when you think about it, is precisely the kind of reliability you need from the company who sells you your communications equipment.

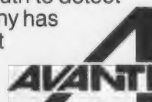
And so at Avanti, we try to act more like a partner than a supplier. Which means always being there when you need us. Anticipating the kind of products you'll have to have. And delivering the kind of service you can't get anyplace else.

Whether you're transmitting data from desk to desk, or from city to city, Avanti

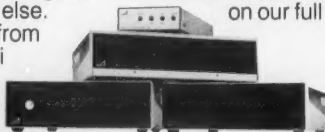
has the equipment to make it work.

Plus the experience to help you choose the most cost-effective solution. From our full line of synchronous and asynchronous medium distance modems, line drivers, interface converters, modem sharing units, modem eliminators and more.

You don't have to be a super sleuth to detect which local data distribution company has the most to offer. It's elementary. Just write to Avanti for the facts on our full line.



Avanti Communications Corp., Aquidneck Industrial Park
Newport, RI 02840, Tel: (401) 849-4660, TWX: (710) 387-6543



We're always here when you need us.

BUILDING A TOTAL DATACOMM NETWORK IS EASY WITH GDC.

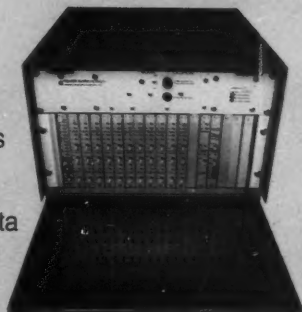


GDC Modems help reliably transmit information from remote locations to computer facilities.

Datcommunications networks keep business data flowing to keep the business world alive.

General DataComm designs, assembles, installs and services datcommunications networks.

We are the largest independent supplier of data transmission equipment. We sell and lease a complete line of modems, multiplexers, and diagnostic equipment.



GDC Time Division Multiplexers allow cost effective use of transmission lines linking emergency networks to medical centers, hospitals and laboratories.

Our low speed and medium speed modems have captured a large portion of the market. Our high speed modems will do even better.

Our reputation is built on the broadest line of reliable, proven products, and the ability to design and engineer datacomm systems on a cost-effective basis.

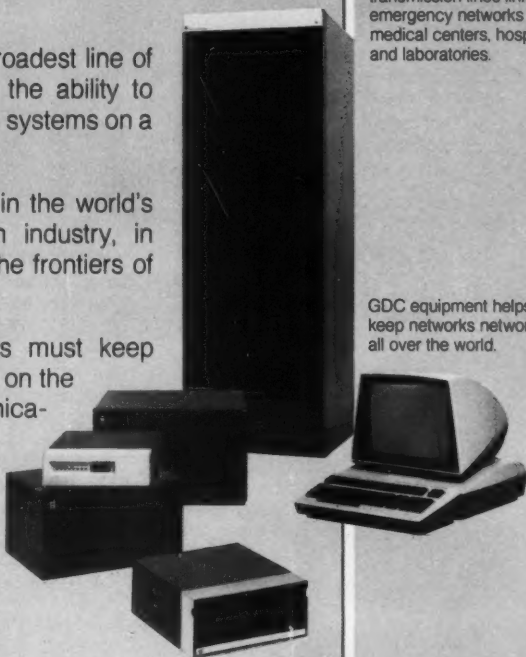
It's a reputation we've earned in the world's money markets, transportation industry, in emergency situations and on the frontiers of energy exploration.

Wherever datacomm networks must keep working, General DataComm is on the job. To keep business communications up-to-date and flowing.

To learn more about our product line and our service or leasing programs, write or call today:



The GDC NETCON-5 diagnostic systems reduce network down time to keep time-sensitive information flowing to financial networks.



GDC equipment helps keep networks networking all over the world.



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104-1220 Innes Road Ottawa, Ontario Canada, K1B 3V3

General DataComm (UK) Ltd.

Toutley Road Wokingham Berkshire RG11 5QN, England

Short Hauls from DCS

Access—Ability through Ingenuity

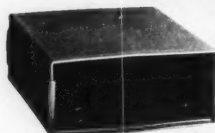
The ACCESS NETWORK™ product line from DCS provides the user with a versatile and cost effective means of local data distribution. The universal system architecture allows the same modem PC card to be used in free-standing and rack mount versions. And what's more, different modem types may be intermixed within the same economical card rack.

Our ACCESS NETWORK™ products are designed for high reliability and ease of use and the universal system architecture minimizes spare requirements.



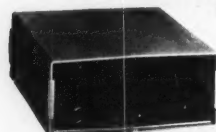
The DCS SR series of short range data sets are designed for in-

house data distribution or communication over telco supplied twisted metallic pairs (Bell 43401). Synchronous and Asynchronous versions are available complete with loop-back capability and diagnostic LED



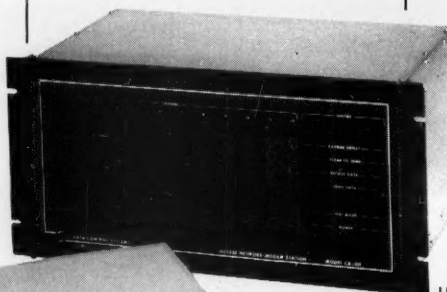
status indicators. For extended range, the LM series is available.

Our IA series of modem eliminators/line drivers can be used to connect local syn-



chronous terminals to the teleprocessing port of a communications front end.

The new Data-Control Systems RANDOM ACCESS MODEMS™ utilize advanced carriers current techniques to transmit digital information over AC power lines with remarkably low bit error rates. "Wireless" random access offers extreme versatility in interconnecting electronic office products and data terminals, allowing random formation of data paths by simply plugging into an AC power Outlet.



Microwave Modems Modular Building Blocks Wideband Multiplex Systems

DCS manufactures a complete line of data communications modular components for wide band transmission.

Our PSK Modulators and demodulators are used extensively in satellite communications systems, microwave transmission, and high speed coaxial links. Our microwave modems can be used for insertion of data channels above voice or video on existing or proposed links.

Our systems personnel and sales engineers are ready to discuss your requirements.

ACCESS NETWORK™



coaxial cable modems allow numerous terminals to be

served over a single coax cable. Additional terminals may be added using simple "T" connectors. FDM stacking of subcarriers is a natural for multi-dropping applications.

Data Carrier Systems

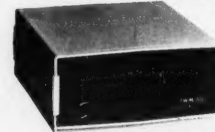
FDM multiplexing and FM subcarriers lend themselves to a wide variety of user applications. Completely independent data networks can coexist without the limitations of baseband signaling. In fact, with appropriate techniques, baseband signals can exist undisturbed while carriers are added at higher frequencies and FM systems allow a mixture of analog and PCM subcarriers. DCS Data Carrier Systems offer true Access-Ability.

The ACCESS NETWORK™



TWM series uses data carrier techniques over twisted

pairs. In-house wiring can be expanded to multichannel facilities easily. Possibilities include adding data channels to thermostat



wires or user-owned telephone wires.

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DATA-CONTROL SYSTEMS

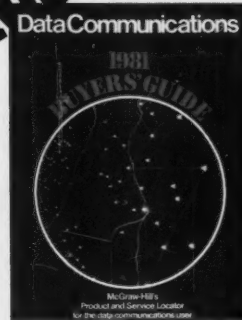
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Data Communications
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PRODUCTS AND SERVICES DIRECTORY

Equipment associated with data communications is divided into nine specific sections. Each section contains a dissertation on the state of the art of the technology, followed by the names of companies that supply each of the products in that section.

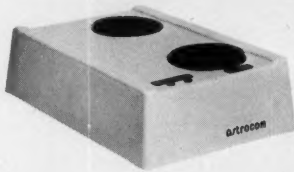
VENDOR DIRECTORY

Here you'll find an alphabetical listing of known suppliers for equipment and services in the data communications market. Information on each company includes company name, address, telephone number, name of person to contact, products manufactured or services offered, sales offices, plus page references to advertisements which offer additional information on products and services.

and our unique READERS' UPDATE SERVICE

Our special update cards allow suppliers to **keep** you informed of product developments throughout the year.

1100 Series Acoustic Coupler



- Low Power
- High Reliability
- Originate or Originate/Answer Modes
- 0 - 300 BPS
- 20ma and/or RS232C Interface
- Half/Full Duplex
- Hardware (DAA) Coupling
- W.E. 103/113 Compatibility
- U.L. Approved

1300 Series Modem



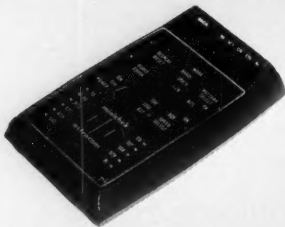
- Low Power
- High Reliability
- Originate, Answer, or Originate/Answer Modes
- 0 - 300 BPS
- RS232 Interface
- Auto - Answer Capability
- Half/Full Duplex
- W.E. 103/113 Compatibility
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration
- Interface Display
- U.L. Approved
- FCC Approved

Modem Emulator



- Low Power
- High Reliability
- Low Profile Package
- Circuit Card, Stand-Alone, or Multimodem Rack Mount Configuration
- Interface Display
- Multi-Speed - 2400 to 19,200 BPS
- Synchronous or Asynchronous

minichek Data Transmission Test Set



- Asynchronous or Synchronous Operation
- RS232 Interface Test Points
- Displayed Error Count
- Test Pattern Selection
- A Random 511 or 2047 Bit Test Pattern
- Selective Display of Interface Signals
- Battery Operated
- Pocket Size
- Low Battery Power Indication

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- Battery Powered
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- U.L. Approved
- Analog Loopback
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- U.L. Approved

400 Series Limited Distance Modem Synchronous



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- W.E. 301/303 Interface Compatibility
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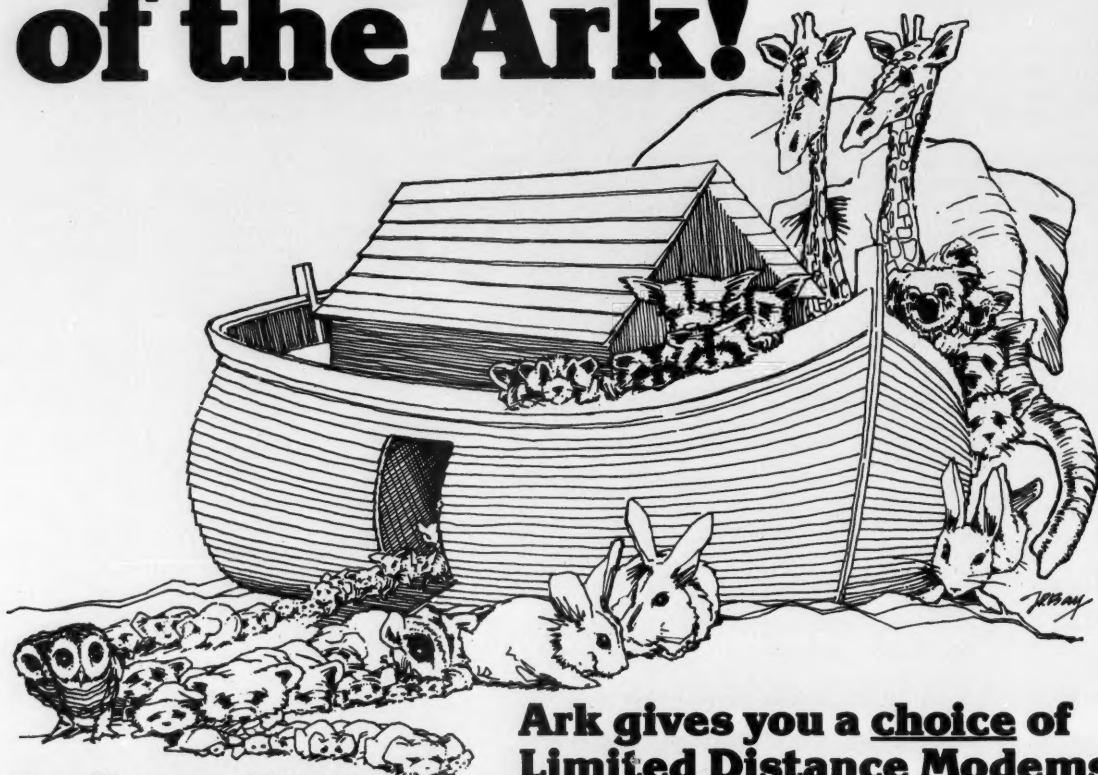
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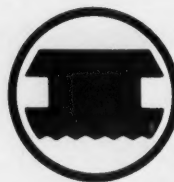
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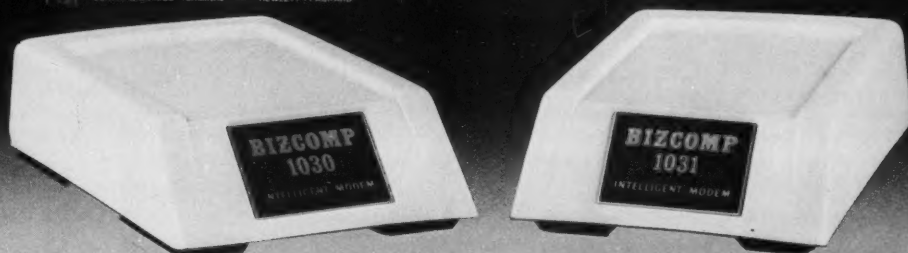
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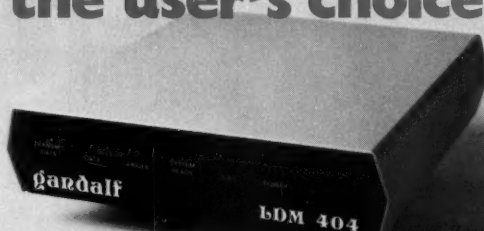
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The rack mounted version fits Gandalf's Model LDS 3000A standard 19" rack with power supply and two multi-drop buses.

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Add it all up and you see why LDM 404B is a "user's choice." Our engineers will be happy to discuss your modem needs, without obligation on your part.

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LDS 120 - 100,000 hours MTBF

A high-performance asynchronous short haul modem that operates up to 9600 baud out to 5.5 miles on 26 AWG cable.

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LDS 120 has been a "user's choice" for years.

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LDS 140 asynchronous modem transmits and receives on loaded or unloaded lines out to 10 miles. Or 9600 baud on unloaded lines out to 6 miles. LDS 140 brings your message thru every time. And at a price you can afford.

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Diagnostic and Test Equipment

Complex data communications networks have intricate specialized operating components, and users find it increasingly difficult to pinpoint network faults. But high-level testers acting like modems as well as host computers, can now check various pieces of equipment in real time. Programmable, these devices can send a test message to a terminal. They can also be programmed to transmit other messages, depending on the response they get from the tested equipment.

Many new data communications networks use bit-synchronized protocols for data link control. As a result, network managers have asked that the modern testers be able to handle these protocols. To understand how these testers operate, users must first familiarize themselves with the general structure of bit-synchronized protocols, such as CCITT's high-level data link control (HDLC) protocol.

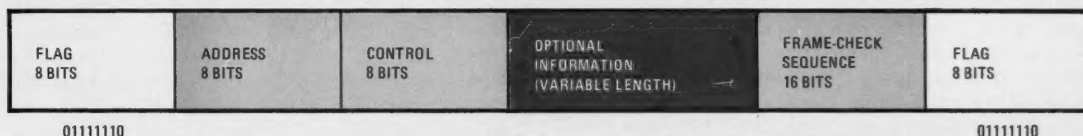
Figure 1 shows a typical HDLC frame. At the start of any frame, an 8-bit flag field appears, composed of a binary 0 followed by six 1s and another 0. The starting

flag synchronizes the receiving machine with the frame, and the last flag signals the end of a frame. Following the starting flag is an 8-bit address field. When the host or primary station transmits a specific address, it designates which secondary station is to receive the command sequence or information transmitted within the frame. A secondary station transmits its address in response to a poll, identifying itself to the host.

The control field that follows the address bits is perhaps the most essential field in HDLC. The 8-bit sequence within the control field determines, among other things, the type of frame being sent, the number of frames being transmitted, whether or not more frames await transmission, the number of frames received, and the status of either the secondary device or the host, depending on which is transmitting. Figure 2 shows the control-field bit position for the HDLC information-transfer frame format.

As the diagram depicts, the information-transfer frame is designated by a 0 in the ninth bit position,

1 HDLC information frame



which is also the first bit position of the control field. The tenth, eleventh, and twelfth bits indicate the number of frames sent by the transmitting machine. The thirteenth bit is the poll bit, as well as the final bit. When this bit is sent by the primary station, the secondary station begins transmission. If it is sent by the secondary machine, the primary machine knows that there are no more frames pending transmission.

At first glance, monitoring an HDLC protocol would seem fairly simple: set up a trigger character for the desired device address and wait until the tester captures the frame with that specific address. However, the information field can contain any number of bits, allowing random bit combinations within that field. Figure 3 shows what can happen when a tester is set up with just a trigger address for a given field. Assume a trigger position that captures data before and after the trigger and a capture buffer of at least 1,000 bits. The tester, programmed with an address trigger of C_H7_H , slides through the information frame looking for that particular bit pattern and locates it.

STX character anchors trigger

With character-oriented protocols, this type of sliding search is appropriate, since the frame address is preceded by a specified start-of-text (STX) character that can appear in no other place in the frame. This character can then be combined with the address character (provided the tester's trigger buffer is large enough). The combination of these two character sequences, the STX character and the frame address, anchors the tester's trigger to the right search position for the desired address. This is not the case with HDLC.

What is needed to monitor and trap data from a device on a network using a bit-oriented protocol, such as HDLC, is a feature that will anchor the trigger search to the first bits of any given frame. Testers with a

combination trigger and mask can do this.

The mask is useful for capturing certain types of frames with a given address. Figure 4 shows how it can trap an information frame coming from the secondary device suspected of malfunctioning. (In a network where all but one terminal is working, it is assumed that the host is functioning properly.) As can be seen, a match is found both between the trigger and the address in the data stream and between the first bit in the control field and the ninth bit in the tester's trigger. Since there is a 0 in the control field's first bit, the tester is trapping only information frames with the address F_H5_H . Note also that the remaining bits in the control field are masked; that is, the 1s fill positions of no importance, and the user can determine the number of frames sent and received by the secondary device and examine the information field.

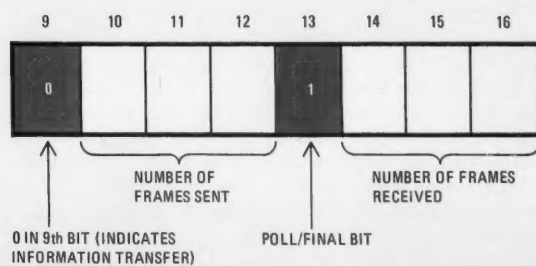
BERT loops bits back

Comprehensive testing of a data communications link requires a tester that can not only monitor and simulate terminals and circuit-terminating equipment but also test bit error rates. A bit-error-rate tester (BERT) allows a user to pinpoint errors in transmission and reception.

Briefly, BERT works in this way. The tester transmits a series of bits from a given terminal site. This series is then looped back at various junctures on the communications channel. The service engineer uses the tester to compare what is transmitted with what is received. The point at which errors are introduced indicates the location of the faulty system component.

The number of bits received in error divided by the total number of transmitted bits is the bit error rate. The number of blocks of bits of predefined length (usually 1,000 bits per block) with at least one bit error divided by the total number of transmitted blocks is the block-error rate (BLERT). Many testers have this capability for checking large volumes of data traffic.

2 Control field



Routine tests in storage

The last thing a service engineer needs is a customer standing over him while he tries frantically to key a diagnostic routine into the tester. For this reason, a service engineer checking a site that uses one type of equipment or one kind of network protocol prefers a data communications tester that can store often-used test routines. Located in a storage medium, these routines can be quickly called up by the user. With a few quick keystrokes, the user can select and enter messages, program the triggers, and set the timer. Also, storage media enable data communications specialists at service depots to program the tester with

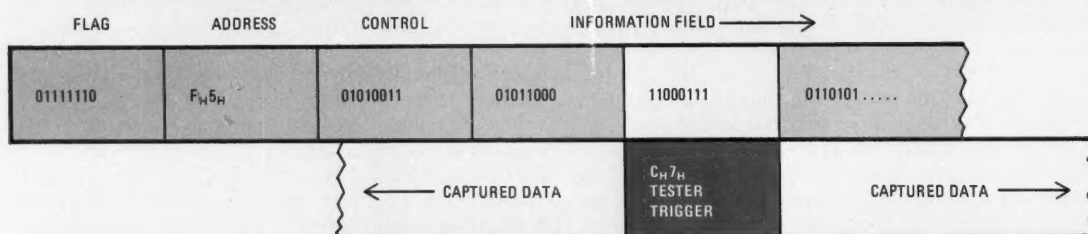
complex go/no-go programs that less-qualified service personnel at field locations need only plug in and run when something goes wrong.

The key to shopping for testers with storage media is to look for portability and price. Many testers have optional storage tape or floppy-disk drives, but are costly and cumbersome. Costly as well are bubble memories, which allow for greater portability and have the same storage flexibility as tape or disk drives.

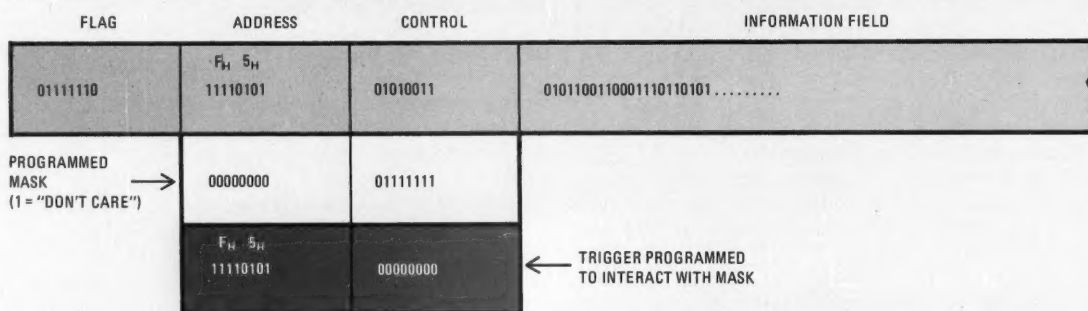
Most synchronous protocols use a cyclic redundancy check (CRC) or longitudinal redundancy check (LRC) for spotting errors. It is critical to know which test applies to a particular protocol. HDLC, for example, uses the CCITT CRC-16. IBM's bisynchronous protocol, however, requires the accepted American National Standards Institute CRC-16.

Service organizations for carrier-channel vendors and users testing the integrity of the carrier channel

3 Data captured in wrong trap



4 Right trap for message segment



Currently, the best compromise between storage capability and cost seems to be erasable programmable read-only memory (EPROM) or masked ROM storage. Although not as easy to program as tape or disk drives (ROMs or EPROMs must be programmed using special equipment, and ROM storage cannot be erased), both storage media allow the user to store many programs in a small space. Memory-access time using front-panel switches is almost instantaneous.

Whether the user needs a programmable tester or not depends on several factors. An assumed feature is the tester's ability to monitor the critical digital (RS-232-C and RS-449) leads, because this is the starting diagnostic point of all data communications links.

HDLC options are costly for bisync

The same criteria for buying a tester that monitors or that simulates HDLC-protocol networks apply also to networks that use character-oriented protocols. Users should be aware that HDLC-tester capabilities are frequently optional, and costly, for a bisync network.

must check the bit error rate. Bit-error-rate testers can indicate where transmission errors occur on the channel. The key feature to look for here is that the tester sends a pseudorandom bit pattern for the length of time the vendor specifies. ■

For more information on diagnostic and test equipment, see the following DATA COMMUNICATIONS articles.

1. "How network control curbs downtime," David L. Lyon, July 1980, p. 52. As computers and communications gear become faster, more efficient, and more functional, the price-performance ratio improves. There is, however, another price to pay, as an interactive network delivers increasing benefits. This price is figured in downtime, the undoing of DDP networks.

2. "Making DDP network failures 'invisible,'" Richard A. Lang, April 1980, p. 95. Attaining maximum perceived availability in a DDP network is no small task, particularly when conditions that hinder availability can be neither eliminated nor controlled by the most carefully planned operating procedures.

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Leasametric
Foster City, CA
Nu Data Corp
Little Silver, NJ
Protocol Computers Inc
Los Angeles, CA
Questronics Inc
Salt Lake City, UT
Rental Electronics Inc
Palo Alto, CA
Siemens Electric Ltd
Digital Systems Div
Edmonton, Alberta
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Tekelec-Airtronic S A
Boulange,
Tektronix Inc
Beaverton, OR
Teleprocessing Products Inc
Simi Valley, CA
Tesdata Systems Corp
McLean, VA
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Universal Data Systems Inc
Huntsville, AL
U S Instrumental Rentals
San Mateo, CA
Via West
Phoenix, AZ

ERROR RATE DETECTORS

ASTROCOM CORP
St Paul, MN ADV PGS 66,86
ATLANTIC RESEARCH CORP
Alexandria, VA ADV PG 85
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA ADV PG 81
GANDALF DATA INC
Wheeling, IL ADV PG 70
MULTI-TECH SYSTEMS INC
New Brighton, MN ADV PGS 58-59
SIEMENS ELECTRIC LTD
DIGITAL SYSTEMS DIV
Edmonton, Alberta ADV PG 80
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ ADV PG 79
Astrocom Corp
St Paul, MN
Atlantic Research Corp
Alexandria, VA
Bowmar/Alti Inc
Acton, MA
California Microwave Inc
Sunnyvale, CA
Chess
Denver, CO
Com/Tech Systems
New York, NY
Dataproducts New England
Wallingford, CT
DEI-Teleproducts
Escondido, CA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digitech Data Industries Inc
Ridgefield, CT
Electrodata Inc
Bedford Heights, OH
Electronic Interface Assoc Inc
New York, NY
Epicom Inc
Altamonte Springs, FL
Frederick Electronics Corp
Frederick, MD
Gandalf Data Inc
Wheeling, IL
General Telephone Co of the Northwest
Everett, WA
Hewlett-Packard Co
Palo Alto, CA
International Data Sciences Inc
Lincoln, RI
Kapsi Laboratories
San Mateo, CA
Lear Siegler Inc
Sierra Electronic Div
Menlo Park, CA
Leasametric
Foster City, CA
Linkabit Corporation
San Diego, CA
Multi-Tech Systems Inc
New Brighton, MN

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Moorestown, NJ ADV PG 79
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McLean, VA ADV PG 78
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA ADV PG Cover II
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL ADV PG Cover IV
Applied Data Communications
Tustin, CA
Applied Delta Systems Inc
Bellmawr, NJ
Astrocom Corp
St Paul, MN
Atlantic Research Corp
Alexandria, VA
Cambridge Telecommunications
Burlington, MA
Chess
Denver, CO
Commex Inc
Crofton, MD
CSS Telecommunications
Mountain View, CA
Custom Terminals
Hauppauge, NY
Dataproducts New England
Wallingford, CT
Develcon Electronics Inc
Doylestown, PA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digitech Data Industries Inc
Ridgefield, CT
Dynatech Data Systems
Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Epicom Inc
Altamonte Springs, FL
Halcyon
San Jose, CA
Hewlett-Packard Co
Palo Alto, CA
IMP Electronics Division
Industrial Machine Parts Inc
Cherry Hill, NJ
International Data Sciences Inc
Lincoln, RI

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San Jose, CA ADV PGS 82-83
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SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ ADV PG 79
TESDATA SYSTEMS CORP
McLean, VA ADV PG 78
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL ADV PG Cover IV
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Avant Garde Computing
Cherry Hill, NJ
Chess
Denver, CO
Commex Inc
Crofton, MD
CSS Telecommunications
Mountain View, CA
Develcon Electronics Inc
Doylestown, PA
Digitech Data Industries Inc
Ridgefield, CT
Draneitz Engineering Labs Inc
S Plainfield, NJ
Electronic Interface Assoc Inc
New York, NY
General Telephone Co of the Northwest
Everett, WA
Halcyon
San Jose, CA
Hewlett-Packard Co
Palo Alto, CA
International Data Sciences Inc
Lincoln, RI
Lear Siegler Inc
Sierra Electronic Div
Menlo Park, CA
Leasametric
Foster City, CA
Omnitex Data
Phoenix, AZ

Paradyne Corp
Largo, FL
Questronics Inc
Salt Lake City, UT
Rental Electronics Inc
Palo Alto, CA
Siemens Electric Ltd
Digital Systems Div
Edmonton, Alberta
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Tektronix Inc
Beaverton, OR
Teleprocessing Products Inc
Simi Valley, CA
Tesdata Systems Corp
McLean, VA
Universal Data Systems Inc
Huntsville, AL
U S Instrumental Rentals
San Mateo, CA

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Pittsburgh, PA **ADV PG 144**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
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Chatsworth, CA **ADV PGS Cover III, 37, 67**
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Chess
Denver, CO
Com/Tech Systems
New York, NY
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Mountain View, CA
Electronic Interface Assoc Inc
New York, NY
Expander Inc
Pittsburgh, PA
Innovative Electronics Inc
Miami Lakes, FL
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Foster City, CA
Micom Systems Inc
Chatsworth, CA
Tektronix Inc
Beaverton, OR
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
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Danbury, CT **ADV PG 63**
INTERTEL INC
Andover, MA **ADV PG 87**
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Miami, FL **ADV PGS 30-31**
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DATA SERVICES
Cherry Hill, NJ **ADV PG 154**
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ **ADV PG 79**

TESDATA SYSTEMS CORP
McLean, VA **ADV PG 78**
TIMEPLEX INC
Rochelle Park, NJ **ADV PG 40**
TRAN TELECOMMUNICATIONS CORP
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Bloomington, MN
American Satellite Company
Germantown, MD
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Avant Garde Computing
Cherry Hill, NJ
Cambridge Telecommunications
Burlington, MA
Chess
Denver, CO
Codex Corporation
Mansfield, MA
Commtext Inc
Crofton, MD
Dataproducts New England
Wallingford, CT
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digitech Data Industries Inc
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Western Development Lab Div
Palo Alto, CA
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Danbury, CT
General Telephone Co of the Northwest
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Giltronix Inc
Palo Alto, CA
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Vienna, VA
Hekimian Labs Inc
Rockville, MD
Hewlett-Packard Co
Palo Alto, CA
Intecom Inc
Dallas, TX
Intertel Inc
Andover, MA
Paradyne Corp
Largo, FL
Racal-Milgo
Miami, FL
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
RCA Global Communications Inc
New York, NY
RCA Globcom Systems Inc
Authorized Resale Common Carrier
New York, NY
RCA Service Co
Data Services
Cherry Hill, NJ
Rockwell-Collins
Dallas, TX
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Telecommunications Technology Inc
Sunnyvale, CA
Tesdata Systems Corp
McLean, VA

Timeplex Inc
Rochelle Park, NJ
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Tymnet Inc
Cupertino, CA

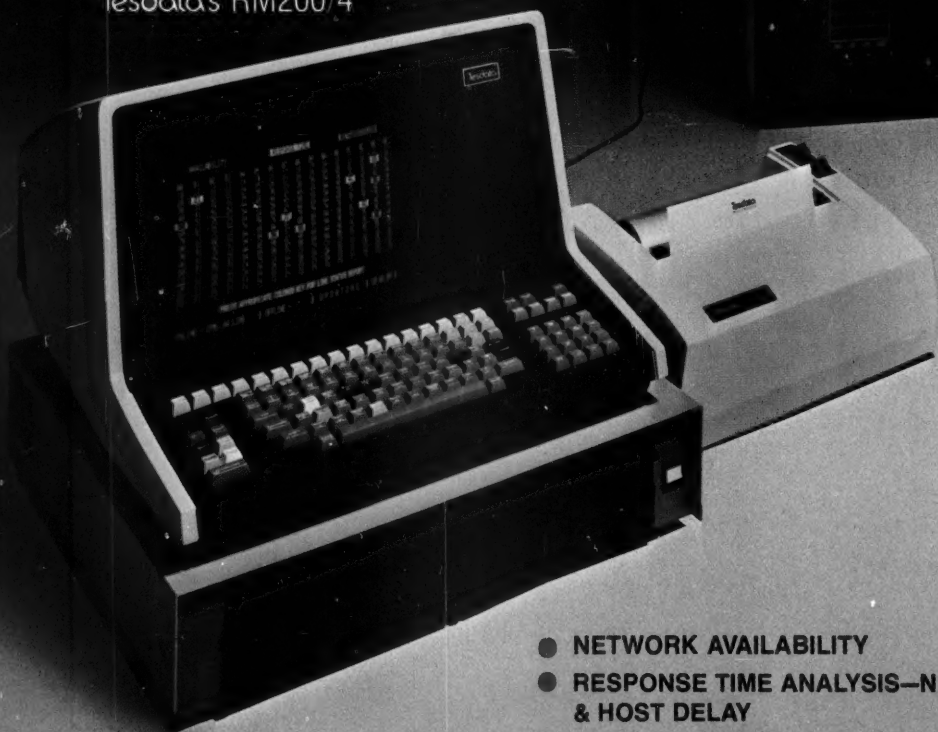
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DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**
DYNATECH DATA SYSTEMS
Springfield, VA **ADV PG 84**
GENERAL DATACOMM IND INC
Danbury, CT **ADV PG 63**
INTERTEL INC
Andover, MA **ADV PG 87**
RACAL-MILGO
Miami, FL **ADV PGS 30-31**
RCA SERVICE CO
DATA SERVICES
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RIXON INC
Silver Spring, MD **ADV PG 32**
SORBUS INC
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TESDATA SYSTEMS CORP
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Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Avant Garde Computing
Cherry Hill, NJ
Bradley Telecommunications
Leonia, NJ
California Microwave Inc
Sunnyvale, CA
Cambridge Telecommunications
Burlington, MA
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Codex Corporation
Mansfield, MA
Commtext Inc
Crofton, MD
CSS Telecommunications
Mountain View, CA
Dataproducts New England
Wallingford, CT
Data Set Cable Co Inc
Ridgefield, CT
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digitech Data Industries Inc
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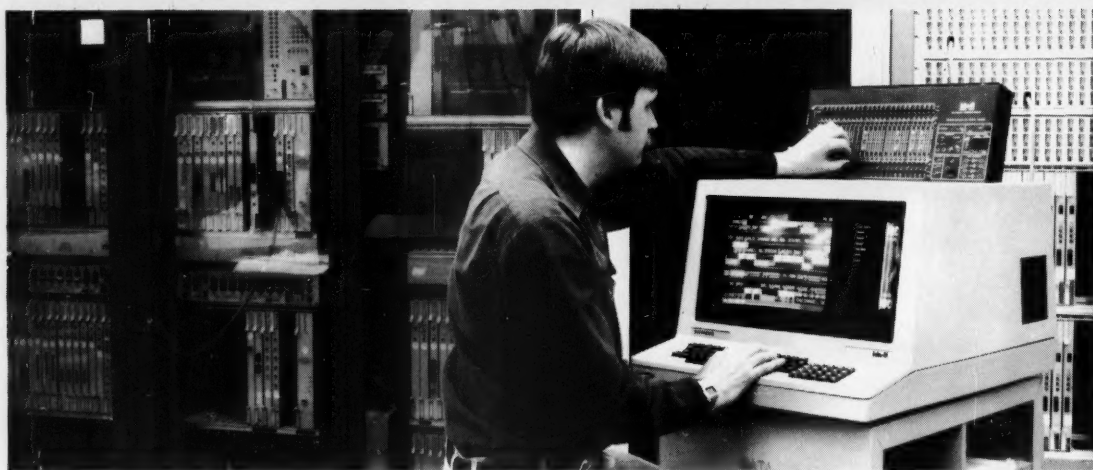
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BEST BUY?



PRICE/PERFORMANCE BREAKTHROUGH EARNS 'BEST BUY' RATING FOR NEW DIGI-LOG DLM III DATA LINE MONITOR

'Best Buy'... a provocative claim that pricks the mind for proof. 'Price/Performance Breakthrough'... awaited news of fact? or shabby boast? Consider the facts yourself.

Before printing our claim, we checked and compared the competitive position of each one of DLM III's performance specifications (see listed highlights). We also examined the product intangibles such as lightweight portability, easy set-up via CRT guided instructions, and rugged dependability. We considered Digi-Log's seven year record as a successful data comm test equipment supplier. We then compared DLM III's low price. No other data line monitor rating approached the new DLM III for value.

A portable, self-contained DLM III is rated a Best Buy for field use because it is compact, easy-to-use, and inexpensive enough to be a practical field service tool.

DLM III even tests itself, and with the interactive option, it can simulate terminals or modems and check the line with a BERT test.

Feature Highlights	DLM III
8K Data Storage	✓
Bit and Byte Protocols	✓
Menu Set-Up	✓
Programmable Trap	✓
EIA RS 232C Breakout	✓
Speed to 19.2 kb	✓
Printer Output	✓
On Line CRC/LRC	✓
Idle Suppression	✓
Lightweight: 17 pounds	✓
Price	\$3190*
Interactive Capability including BERT Test	\$585

A rack-mounted DLM III is a Best Buy for central site use because it is compatible with all the modern protocols, and it offers the features you need for effective network monitoring at a far lower price. In the central site comm center, the new DLM III is an excellent companion to Digi-Log's Network Supervisory System.™

We believe there is a good chance that DLM III has the right combination of capabilities at the right price to be a Best Buy for you. If you agree, act now.

Call Digi-Log for complete specifications and demonstration. Digi-Log Systems, Inc., Network Control Division, Babylon Road, Horsham, PA 19044, (215) 672-0800.

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NETWORK CONTROL DIVISION

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Hardworking hardware.

There's no need to wrestle with digital data transmission problems. Not when you've got a proven Halcyon test instrument to help eliminate downtime and increase system availability.

Used alone, or in combination with one another, Halcyon's 800-Series equipment provides a complete range of monitoring, recording, and trouble-shooting capabilities.

And, since all instruments are microprocessor-controlled, applications are as limitless as your imagination.

Whether it's our easy-to-use automatic data monitor (Model 802A), our super-powerful data link analyzer (Model 803A), or our highly-selective data recorder (Model 804A)—Halcyon's 800-Series instruments offer a blend of exceptional capability and operational simplicity—at a reasonable price.

Model 802A Data Link Monitor: Automatic data monitoring. Just plug in and power up.

Our Model 802A is an extremely versatile, yet easy-to-use real-time monitor. It automatically detects full line configuration details—in both transmission directions. Which means you no longer have to program or set switches for standard line codes, protocols, bit rates, and other configuration parameters.

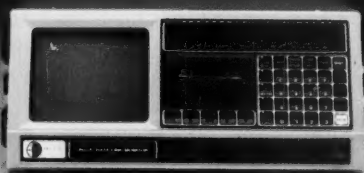
And, because it's so simple to set up, a relatively inexperienced technician can collect the data—then bring it back later for expert analysis. Everything from the efficient solution of transmission problems to the accumulation of statistics on response time, block lengths, etc.

Model 803A μ Fox Data Link Analyzer: From simple monitoring to complex emulation. And everything in between.

Halcyon's Model 803A μ Fox is the ideal instrument for the complete analysis of your data link problems. It's a powerful diagnostic tool designed to test all aspects of the total communications/processing link. Use it on-line to monitor the data character stream in a variety of codes. Or use it off-line to simulate a CPU, a terminal, or a modem to isolate problems.

Model 804A Data Recorder: Selective recording and analyzing. At your leisure.

The programmable 804A can be used alone or with a data link analyzer for on-line recording. Designed to isolate annoying intermittent



Model 802A Data Link Monitor



Model 803A μ Fox Data Link Analyzer

For data system analysis.

problems that come and go, it continuously monitors the data stream—starting and stopping the tape automatically to record pre-selected portions of the data.

And, since the recorder can be connected and programmed by relatively unskilled operators, it improves the efficiency of skilled personnel by letting them analyze the selected data at their convenience.

Regional service centers:
Another example of Halcyon's
total commitment to data
communications.

At Halcyon, we're committed to keeping your equipment operating efficiently.
That's why

we've built a nationwide network of regional service centers and staffed them with factory-trained technicians. By offering local customer support, we can quickly respond to any questions or maintenance problems you might have. And keep downtime to a minimum.

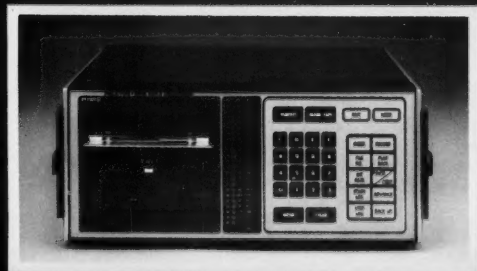
But don't take our word for it. Make us show you. Call your local Halcyon sales engineer today. Or circle the reader service number below. Either way, we'll send you up-to-date information detailing how Halcyon's 800-Series instruments can help you steer clear of costly data transmission problems.



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Model 804A Data Recorder

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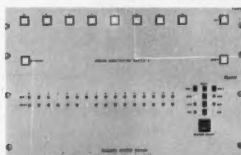
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DynaNet can optimize the efficiency of your data communications network. Numerous features include a full color video terminal for status, alarm display and control. You may establish alarm criteria

and a data base file with respect to each of your lines. Line accessing and reconfiguration controls are menu-selectable from the keyboard or light pen. A printer output port (printer optional) provides an audit trail of all alarms and line interrupts.

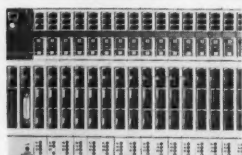
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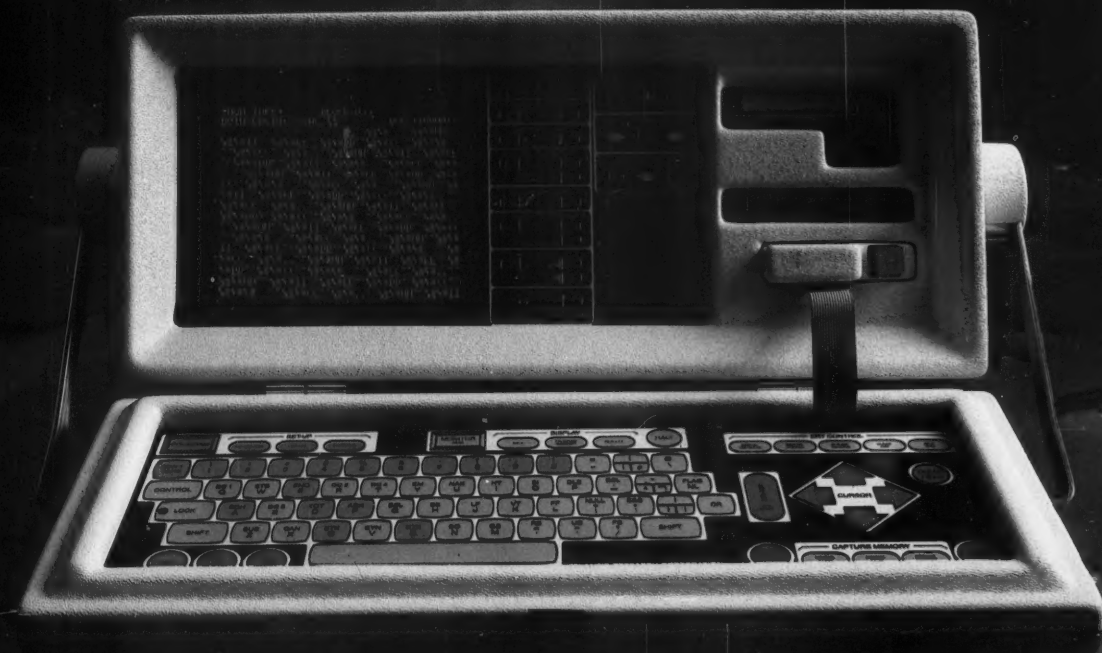
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The INTERVIEW 3000 series Data Analyzer. A new dimension in data monitoring simplicity and power.

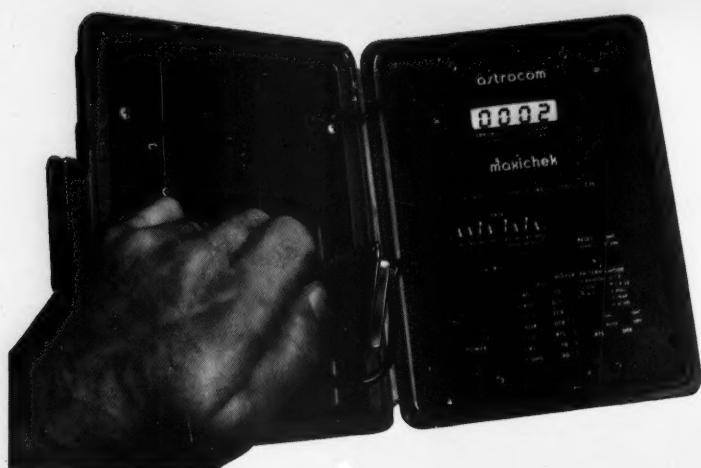
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For complete information, write Tom Frahm, or call (612) 227-8651, or Telex 297421.

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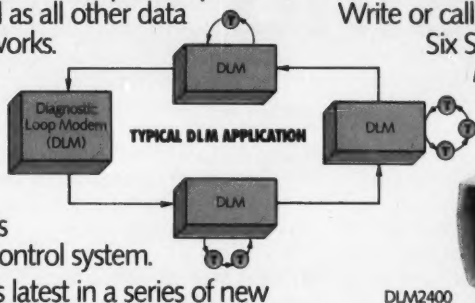
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Local-network systems

Distributed Data Processing

Increasingly, computer networking and distributed data processing technologies are meeting the intensifying needs of information processing. The potential for supporting databases in future distributed environments is promising, but there is tremendous room for innovation in this area. As distributed databases assume a greater role in distributed data processing, their success will depend largely on users' abilities to integrate them and data communications concerns.

Distributed data processing (DDP) is not a new solution to handling data. When computerization was young, the physical distribution of information for processing was common; DDP was the original means of replacing manual functions.

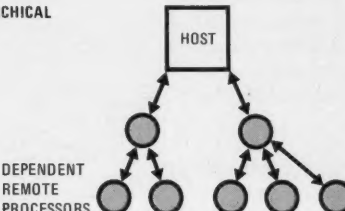
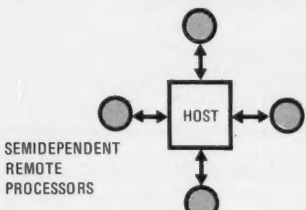
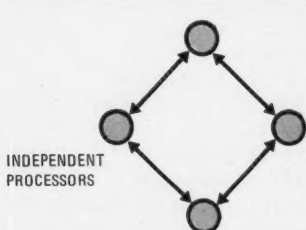
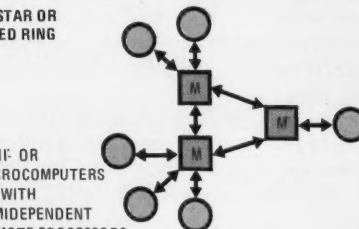
Implementing a distributed data processing network does not necessarily require all the skills of a communications network-design specialist. But understanding the available alternatives enables the nonspecialist to make proper operational and cost-effective choices when examining network configurations.

Both DDP and dispersed processing involve a series of computers, each matched to the processing requirements of functionally, organizationally, or geographically separated locations. But what makes DDP unique is the requirement for information transfer between the individual computers.

A number of available DDP network structures can be supported by software packages from major computer vendors. Each has its advantages and disadvantages and must be viewed in relation to the natural characteristics and overall operational requirements of a particular application. A selection of these structures, together with the pluses and minuses of each, are illustrated in the table. The most common is the hierarchical network—with its dependence on a central host. One of its major drawbacks is the inability of remote processors on the same operational level to back up each other readily.

Of those structures shown, the most complex is the multistar—a combination of star and ring configura-

Network structure types

TYPE	ADVANTAGES	DISADVANTAGES
HIERARCHICAL  DEPENDENT REMOTE PROCESSORS	LOGICAL CONTROLLABLE FLOWS FUNCTIONAL DISTRIBUTION	CONTENTION ON HIGHER LEVELS NO EASY ALTERNATE SERVICE DIFFICULT LATERAL BACKUP CAPABILITIES
STAR  SEMIDEPENDENT REMOTE PROCESSORS	EASE OF CONTROL SIMPLE DATA FLOWS MUTUAL HOST-PROCESSOR BACKUP	HEAVY COMMUNICATIONS TRAFFIC DUPLICATION OF PROCESSING
RING  INDEPENDENT PROCESSORS	ALTERNATE ROUTING LOAD SHARING REDUNDANCY	SOFTWARE OVERHEADS DUPLICATE CONFIGURATIONS CONTROL DIFFICULTIES
MULTISTAR OR STARRED RING  MINI- OR MICROCOMPUTERS (M) WITH SEMIDEPENDENT REMOTE PROCESSORS	VARIABLE PROCESSING POWER RANGE OF CONTROL RELATIONSHIPS ADAPTABILITY INDEPENDENT INDIVIDUAL NETWORKS	COMPLEX SOFTWARE CONTROL COMPLEX NETWORK MANAGEMENT CONTENTION AMONG MINIS DUPLICATION

tions. The multistar configuration's independent mini-computer networks are highly adaptable to a wide range of applications. This flexibility, however, can lead to contention problems among the minicomputers. Lacking the control exercised by a central host, the software must be carefully programmed so that rapid application changes do not cause a stalemate, whereby more than one minicomputer wants to take control at the same time.

The only way to determine the best DDP structure is to analyze each structure's advantages and disadvantages against the application. Most applications define the most suitable—or natural—network structure by

the inherent informational flow requirements and the locations of responsibility and decision-making power within the total structure.

Forming the link

Once the network structure has been defined, the communications links must be identified. These links can be formed through several ways:

- Privately owned cable
- Common carrier leased lines
- Public data networks
- Public dial-up lines
- Land-based microwave communications

■ Satellite communications

The user must be familiar with the characteristics and economies of these links before making a proper selection. The likelihood of using more than one type of link increases with the network's complexity.

Among the common problems that must be resolved at the design stage are data-code compatibility, communications-protocol compatibility, and the equipment's electrical interfacing requirements. The distributed data processing concept, if used most effectively, requires the interconnection of processors that may not have been designed for DDP.

The network designer must ensure complete code compatibility. Most mainframes designed as DDP hosts manipulate data that has been encoded using the EBCDIC specification. However, nearly all minicomputers, which are the natural choices for local-level processors, use data encoded according to the ASCII specification. Vendor-supplied software or hardware techniques—as often implemented in existing products—can easily handle the required code conversion.

In a hierarchical structure with a standard mainframe as its host and minicomputers as the dependent processors, this code conversion is best performed by one processor—preferably the largest one. However, it is often more efficient to use a front-end minicomputer (or microcomputer) specially assigned to the mainframe to make these bidirectional conversions. The functional efficiency of such a front end is considerably enhanced if it must also accommodate protocol differences and various line types. Such a small computer can also serve as a host backup or—with additional software—as a pseudo-host if it is needed in the network structure.

Protocol differences are another major problem for the network designer. A protocol is the set of rules by which the data communications network operates. It is involved in framing bits or characters, controlling errors, numbering messages, controlling transparency, lines, timing, and startup, and resolving special conflicts and other transmission problems.

There are various communications protocol types, as no universally accepted standard exists. Although IBM's synchronous data link control (SDLC) protocol is the leader and the X.25 protocol is a close second, many minicomputer manufacturers support only their own special methodologies. Often this is done to lock out competition, but it is also a result of the need to keep both hardware and software costs at a minimum.

Ready solutions

Most major problems in DDP network design, usually involving access, control, conversions, and linkage, can be solved with one approach. The solutions exist in the public-access networks offered or proposed by several major communications vendors. Management decisions in these areas will have a long-term impact on the organization, and the manager must understand that use of a public network may affect corporate information processing and communications capabilities for many years.

The data-interconnect methodologies, routing capa-

Checking the DDP architecture

This checklist can aid in the evaluation of DDP architecture for a particular application.

Does the architecture support:

- A variety of the vendor's computers?
- More than just simple nodal connections?
- A hierarchical arrangement?
- Different communications modes, protocols, and interfaces?

And does it offer:

- Local and remote processing?
- Remote file access?
- Sufficient peripheral device access?
- Database access?
- Enough access for programmers?
- Modern security?
- Up-to-date error checking?
- Necessary diagnostics?
- Sufficient user transparency?

bilities, and control mechanisms needed in a DDP network are offered by several public-access-network vendors. Network services from companies such as Tymnet and Telenet represent one DDP communications solution. Each company's service has its relative merits, but all share these disadvantages:

- Specialized equipment needs
- Limited code and protocol capabilities
- Vendor-controlled access, priorities, and routing
- Nonuser-defined structures
- Difficult cost-control capabilities
- Nonuser-controlled methodologies

These disadvantages may be significantly reduced with AT&T's Advanced Communications Service (ACS) or the Xerox Telecommunications Network (XTEN); however, these high-potential offerings are not yet available. When either or both are operational, user companies will have to determine the long-term impact of each selection on their processing and data communications capabilities.

Of the promised ACS features, probably the one of greatest interest to DDP network designers is the multiple-protocol-interface support. However, for certain applications, the land-based service may present data-rate limitations.

The bypassing of local-line loops may be the greatest attraction of XTEN for network users. Also, its wider bandwidth would enable data rates that could be needed for the office of the future. However, since XTEN involves new technologies, a long-term debugging stage is expected.

Importance of software

The creation of cost-effective DDP networks is dependent not only on the correct definition of the hardware components and the communications capability but also on the creation and use of extensive system and applications software. Decisions are made, controls applied, and processing executed at each nodal point, and the appropriate software must be installed and

maintained where it is needed throughout the network.

Software is the biggest limiting factor and may be the highest-cost component of today's DDP network. Network designers must consider both the system and applications software needs of these networks. By attending to the following areas, they can minimize the software risks and maximize the cost-effectiveness and operational efficiency of complex networks:

- Implementing network control
- Customizing nodes to the application
- Locating the software packages as needed by the user application
- Establishing communications software sharing between hosts and nodes
- Evaluating risks of program down-line loading
- Implementing and controlling changes to the applications software
- Ensuring compatibility of the vendor's system software with the user's applications software

Choosing a distributed network architecture that will meet all of a user's expectations is not an easy task. Comparison shopping in this area can leave the data communications user confused, mainly because mini-computer suppliers lack standard definitions and a universal network-architecture philosophy.

Although one vendor, for instance, may claim his distributed network has a layered architecture (meaning that the control sections are designed as hierarchical modules), another may regard his controlling software as integrated with the operating system. Many times, the differences between these two designs are not readily apparent. This inconsistency pervades most manufacturers' literature. ■

For more on distributed data processing, see the following DATA COMMUNICATIONS articles.

1. "Don't get confused by the many ways to link

nodes," Terry D. Pardoe, April 1979, p. 97. Because the DDP network consists of many computers, it is essential to know how to connect them and how to satisfy data-transfer requirements.

2. "Shooting for the most efficient DDP architecture," Gerald Williams and Paul Nesdore, September 1979, p. 44. There are many factors to consider when deciding on a distributed minicomputer network. Do not fall into a comparison trap.

3. "Easing your way into a DDP net environment," John M. Seifrick and Dennis F. Tallerico, October 1979, p. 79. Although DDP is well suited to a data communications network used for research, some improvising is necessary to make it effective.

4. "DDP problems—Some solutions are now within reach," Terry D. Pardoe, November 1979, p. 71. The optimum network configuration is often derived from a grasp of the planned application.

5. "Distributed DBMS no longer just a concept," James B. Rothnie, Jr., January 1980, p. 61. The distributed database-management system is coming. A prototype DBMS addresses the problems of integration and contention—and works.

6. "Improve information access with the database machine," Robert H. Holland, March 1980, p. 95. The growing need for more efficient data storage and retrieval has spurred the development of a computer architecture that is also suitable in a network node.

7. "Making DDP network failures 'invisible,'" Richard A. Lang and Richard E. Pigman, April 1980, p. 95. A well-thought-out design and a knowledgeable person in charge are key to a seemingly problem-free network.

8. "Aspects of database design in a distributed network," Mary E. S. Loomis, May 1980, p. 83. Approaches to creating a successful database are illustrated, based on the author's extensive knowledge of information systems.

DDP SYSTEMS

ALANTHUS DATA COMMUNICATIONS CORP
 Rockville, MD **ADV PG 32B**
DATA ACCESS SYSTEMS INC
 Blackwood, NJ **ADV PG 123**
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
 Horsham, PA **ADV PG 81**
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
 Schenectady, NY . . . **ADV PGS 152-153**
MOHAWK DATA SCIENCES CORP
 Parsippany, NJ **ADV PG 122**
NEC INFORMATION SYSTEMS INC
 Lexington, MA **ADV PG 6**
 Alanthus Data Communications Corp
 Rockville, MD
 American Satellite Company
 Germantown, MD
 AM Jacquard Systems
 Santa Monica, CA
 Applied Digital Data Systems Inc
 Hauppauge, NY
 Applied Systems Corp
 St Claire Shores, MI
 Artelonics Corp
 Santa Clara, CA
 Aydin Controls
 Ft Washington, PA
 Billings Computer Corporation
 Provo, UT
 The Braegen Corp
 Cupertino, CA
 Bunker Ramo Corp/Info Sys Div
 Trumbull, CT
 Cado Systems Corp
 Torrance, CA
 Cambridge Telecommunications
 Burlington, MA
 Cincom Systems Inc
 Cincinnati, OH
 CMC Marketing Corp
 Houston, TX
 Commtex Inc
 Crofton, MD
 Computer Sciences Corp
 El Segundo, CA
 Comtal Corp
 Pasadena, CA
 Control Data Corp
 Minneapolis, MN
 Convergent Technologies
 Santa Clara, CA
 Conversational Systems Corp
 New York, NY
 CSPI
 Billerica, MA
 Cummins-Allison Corp
 Data Systems Div
 Elk Grove Vil, IL
 Data Access Systems Inc
 Blackwood, NJ
 Database Design Inc
 Ann Arbor, MI
 Data Communications Corp
 Memphis, TN
 Data General Corporation
 Westboro, MA
 Datamedia Corp
 Pennsauken, NJ
 Datapoint Corporation
 San Antonio, TX
 Data Terminals & Communications
 Campbell, CA
 DigiLog Systems Inc
 Micro Computer Div
 Horsham, PA

DigiLog Systems Inc
 Network Control Div
 Horsham, PA
 Digital Datacom Inc
 Irvine, CA
 Digital Equipment Corp
 Maynard, MA
 Digital Systems Corp
 Walkersville, MD
 DMC Systems Inc
 Santa Clara, CA
 Durango Systems Inc
 San Jose, CA
 ECS Microsystems
 San Jose, CA
 Epic Data Corp
 Richmond, BC
 First Computer Corp
 Westmont, IL
 Ford Aerospace and Communications Corp
 Western Development Lab Div
 Palo Alto, CA
 Formation Inc
 Mt Laurel, NJ
 Four-Phase Systems Inc
 Cupertino, CA
 Gamma Technology Inc
 Palo Alto, CA
 GDS Inc
 Seattle, WA
 General Automation
 Anaheim, CA
 General Electric Co/Communication
 Equipment Leasing and Service
 Schenectady, NY
 GNAT Computers, Inc.
 San Diego, CA
 GTE Telenet Communications Corp
 Vienna, VA
 Harris Corp
 Computer Systems Div
 Fort Lauderdale, FL
 Harris Corp
 Data Communications Div
 Dallas, TX
 Harris-Darconz
 Albuquerque, NM
 Hewlett-Packard Co
 Palo Alto, CA
 Honeywell Information Systems
 Waltham, MA
 Infolink Data Communications
 San Diego, CA
 Informatics Inc
 Woodland Hills, CA
 Interactive Systems/3M
 Ann Arbor, MI
 Intertec Data Systems Corporation
 Columbia, SC
 Leasametric
 Foster City, CA
 Logical Machine Corporation
 Sunnyvale, CA
 Lundy Electronics & Systems Inc
 Glen Head, NY
 Microdata Corporation
 Irvine, CA
 Minicomputer Systems
 Elmsford, NY
 Modular Computer Systems
 Fort Lauderdale, FL
 Mohawk Data Sciences Corp
 Parsippany, NJ
 NCR Corp
 Dayton, OH
 NEC Information Systems Inc
 Lexington, MA
 Nixdorf Computer Corp
 Burlington, MA
 Northern Telecom Systems Corp
 Minneapolis, MN
 Olivetti Corp
 Tarrytown, NY

Paradyne Corp
 Largo, FL
 Perkin-Elmer
 Oceanport, NJ
 Pertec Computer Corp
 Los Angeles, CA
 Plessey Peripheral Systems
 Irvine, CA
 Prime Computer Inc
 Natick, MA
 Qantel Corporation
 Hayward, CA
 Raytheon Data Systems/Terminal Div
 Norwood, MA
 Raytheon Data Systems
 Mini-Computer Div
 Mansfield, MA
 Recognition Equipment Inc
 Dallas, TX
 Sperry Univac
 Blue Bell, PA
 Sperry Univac, MCO
 Irvine, CA
 Systems Research Inc
 Okemos, MI
 Texas Instruments Digital Systems Group
 Houston, TX
 The TRW-Fujitsu Co
 Los Angeles, CA
 Vector Graphic Inc
 Westlake Village, CA
 Wang Laboratories Inc
 Lowell, MA

LOCAL NETWORK SYSTEMS

COMPUTER COMMUNICATIONS INC
 Torrance, CA **ADV PG 41**
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
 Danbury, CT **ADV PG 64**
NEC INFORMATION SYSTEMS INC
 Lexington, MA **ADV PG 6**
 Artelonics Corp
 Santa Clara, CA
 ASI Teleprocessing
 Watertown, MA
 Associated Computer Consultants
 Santa Barbara, CA
 The Braegen Corp
 Cupertino, CA
 BTI Computer Systems
 Sunnyvale, CA
 Bunker Ramo Corp/Info Sys Div
 Trumbull, CT
 CMC Marketing Corp
 Houston, TX
 Commtex Inc
 Crofton, MD
 Computer Communications Inc
 Torrance, CA
 Computer Sciences Corp
 El Segundo, CA
 Computrol Corp
 Ridgefield, CT
 Control Data Corp
 Minneapolis, MN
 Convergent Technologies
 Santa Clara, CA
 Custom Terminals
 Hauppauge, NY
 Data Communications Corp
 Memphis, TN
 Data Control Systems
 Div of General Indicator Corp
 Danbury, CT

If you want to know what other products a company makes, turn to **Vendor Directory, page 301.**

Data General Corporation
Westboro, MA
Datapoint Corporation
San Antonio, TX
David Jamison Carlyle Corp
Los Angeles, CA
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Four-Phase Systems Inc
Cupertino, CA
General Automation
Anaheim, CA
Hewlett-Packard Co
Palo Alto, CA
IBM Office Products Div.
Franklin Lakes, NJ
Interactive Systems/3M
Ann Arbor, MI
Interactive Systems Corp
Santa Monica, CA
Logical Machine Corporation
Sunnyvale, CA
Microdata Corporation
Irvine, CA
NEC Information Systems Inc
Lexington, MA
Network Systems Corp
Brooklyn Pk, MN
Northern Telecom Systems Corp
Minneapolis, MN

Peripherals Corp
Bohemia, NY
Prime Computer Inc
Natick, MA
Printer Terminal Communications Corp
Ramona, CA
Qantel Corporation
Hayward, CA
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
Systems Research Inc
Okemos, MI
The TRW-Fujitsu Co
Los Angeles, CA
Tymnet Inc
Cupertino, CA
Ungermann-Bass
Santa Clara, CA
Wang Laboratories Inc
Lowell, MA
Xerox Corp
Office Products Div
Dallas, TX

DATABASE PROCESSORS

CMC Marketing Corp
Houston, TX
Computer Sciences Corp
El Segundo, CA

Comtal Corp
Pasadena, CA
Control Data Corp
Minneapolis, MN
Database Design Inc
Ann Arbor, MI
Data Communications Corp
Memphis, TN
Data General Corporation
Westboro, MA
Data West Corp
Scottsdale, AZ
Esterline Angus Instrument Corp
Indianapolis, IN
Hewlett-Packard Co
Palo Alto, CA
Logical Machine Corporation
Sunnyvale, CA
Qantel Corporation
Hayward, CA
Sentinel Computer Corp
Cincinnati, OH
Southern Pacific Distributed Message
Systems
McLean, VA
Systems Engineering Laboratories Inc
Fort Lauderdale, FL
The TRW-Fujitsu Co
Los Angeles, CA
Wang Laboratories Inc
Lowell, MA

Add-on main memory
Cartridges
Cartridge drivers
Cassettes
Cassette drives
Disk drives, floppy
Disks, floppy
Disk drives, large
Disk packs
Electronic mailboxes
Floppy disk recorders
Tape, magnetic
Tape, paper
Tape punches/readers, paper

Storage Devices and Media

Applying data communications technology to micrographics may change users' attitudes toward this economical storage technique. Microform's nearly limitless capacity remains attractive to users who retain huge quantities of data, but recent advances in magnetic tape and disk memory have overshadowed its benefits. In the wake of these advancements, the main drawback of microform storage—cumbersome access—has become increasingly apparent, leading many users to disregard it, despite its low cost. However, the latest software advances and hardware applications have overcome the problem by allowing the display of digitally transmitted images on CRT terminals.

Microfiche, a microform variant, comes in sheets about 4 by 6 inches. The number of pages a microfiche sheet can hold depends on reduction size, so that in theory, capacity is infinite. In microfiche applications, such as records storage for banks, insurance and utilities companies, and Government agencies, an average reduction produces roughly 250 images per fiche. An

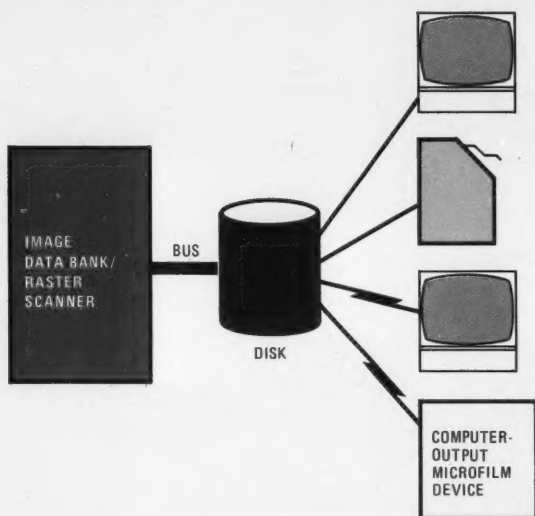
index to information stored on fiche can be kept on disk, while the entire record remains on microfiche. This reduces the cost of storing the complete information file on disk—often by as much as 30 percent. Studies of microfiche applications have shown, for example, that 3 billion characters stored on disk may cost \$15,000 a month, while the same number stored on microfiche may cost \$10,000.

Distributing a large database is another cost-effective application of microfiche. A half-billion-character database, already in digital form, is easily unloaded onto microfiche, leaving the index on the computer. Microfiche copies can then be distributed by mail.

Updatable microfiche, a recent advancement, allows users to append new material to files, analogous to adding paper to files. Previously, microfiche additions appeared as the last items on the film sheet. But treating microfiche as a unit similar to a file folder reduces file-sequencing and indexing problems.

Although it may sound trivial, integration is still a

Microfiche transmission



challenge to users. Integration difficulties occur between machines, between operating systems, or between people and machines. Of course, integration itself is only a first step. Once integrated, information must be skillfully organized.

Communicating micrographics

Although there are few communicating micrographics machines at the present time, manufacturers have moved in that direction. Most machines scan an image

on microform produced from a computer-output-microfilm (COM) unit and transmit the image over communications lines. One company in the Washington, D.C., area, Planning Research Corporation, offers such a setup (see illustration).

The trend of merging micrographics and data communications is also being assisted by video technology. This technique places a COM image in front of a camera, displaying the image to one or hundreds of persons on a video-distribution network, either by hard-wired machines or over satellites.

Teknekron, located in Sunnyvale, Calif., is typical of such new companies developing applications of merged technologies that are expected to affect users by the mid-1980s.

Spinning wax

One of the most radical developments among media and storage devices is the videodisk, which is capable of storing hundreds of millions of characters. Currently it is the hottest item predicted for storage and transmission. There still are problems to work out, however. One problem is price. To drive the cost down, manufacturers must sell videodisk heavily in the home-use market. But the home-use market is for serial access to information, including entertainment, and therefore storage devices like videodisks are designed for serial access, not random access.

Designing the videodisk heads to operate in random access—which is now being done experimentally—takes a large investment in research and development. When the design for random access is applied and the price is brought down, which will take roughly five years, users will have to begin thinking about how videodisks can replace magnetic disks and large databases of microfiche. ■

ADD-ON MAIN MEMORY

DIGITAL PATHWAYS INC.

Mountain View, CA **ADV PG 147**

MEMOREX CORP

Cupertino, CA **ADV PG 32A**

Able Computer
Irvine, CA
American Used Computer Co
Boston, MA
Ampex Corp
Memory Products Div
El Segundo, CA
Applied Systems Corp
St Claire Shores, MI
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Braegen Corp
Mini-Peripherals Div
Anaheim, CA
CMC Marketing Corp
Houston, TX
Computer Automation
Naked Mini Div
Irvine, CA
Control Data Corp
Minneapolis, MN
CSPI
Billerica, MA
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
Dataram Corp
Cranbury, NJ
Decision Data Computer Corp
Horsham, PA
Digital Equipment Corp
Maynard, MA
Digital Pathways Inc.
Mountain View, CA
Fabri-Tek Inc
Eden Prairie, MN
First Computer Corp
Westmont, IL
Formation Inc
Mt Laurel, NJ
Hewlett-Packard Co
Palo Alto, CA
Intersil Inc
Cupertino, CA
Lantor Inc
Playa Del Rey, CA
Macrolink
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Memorex Corp
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Monolithic Systems Corp
Englewood, CO
Mostek Corp
Carrollton, TX
Motorola Semiconductor Prod
Phoenix, AZ
NCR Corp
Dayton, OH
Pacific Cyber/Metrix Inc
Dublin, CA
Periphonics Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Plessy Peripheral Systems
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PolyMorphic Systems
Santa Barbara, CA
Prime Computer Inc
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Raytheon Data Systems

Mini-Computer Div
Mansfield, MA
Rianda Electronics Ltd
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Singer Co
Librascope Div
Glendale, CA
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Storage Technology Corp
Louisville, CO
Trendata/Standard Memories
Santa Ana, CA
Unicom Computer Corporation
Sausalito, CA
Vector Graphic Inc
Westlake Village, CA
Vermont Research Corp
North Springfield, VT
Wang Laboratories Inc
Lowell, MA
Zitel Corp
San Jose, CA

CARTRIDGES

MEMOREX CORP

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Santa Monica, CA
BASF Systems
Bedford, MA
Boston Financial & Equity Corp
Boston, MA
Computer-Link Corp
Burlington, MA
Control Data Corp
Minneapolis, MN
Data Electronics Inc
San Diego, CA
Data General Corporation
Westboro, MA
Datapoint Corporation
San Antonio, TX
Data Terminals & Communications
Campbell, CA
Digital Equipment Corp
Maynard, MA
EMM Peripheral Prod Div
San Jose, CA
General Telephone Co of the Northwest
Everett, WA
Hewlett-Packard Co
Palo Alto, CA
Hico Horizons Intl Co
Menlo Park, CA
Inmac
Santa Clara, CA
Memorex Corp
Cupertino, CA
Micro Communications Corp
Waltham, MA
NCR Corp
Dayton, OH
Olivetti Corp
Tarrytown, NY
Qantel Corporation
Hayward, CA
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
Royal Business Machines Inc
Hartford, CT
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA

Tektronix Inc

Beaverton, OR
Terminal Data Corp
Rockville, MD
Tri Data
Mountain View, CA
Verbatim Corp
Sunnyvale, CA

CARTRIDGE DRIVES

MEMOREX CORP

Cupertino, CA **ADV PG 32A**

MOHAWK DATA SCIENCES CORP

Parsippany, NJ **ADV PG 122**

American Used Computer Co
Boston, MA
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Ampex Corp
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El Segundo, CA
Applied Systems Corp
St Claire Shores, MI
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Braegen Corp
Mini-Peripherals Div
Anaheim, CA
Columbia Data Products
Columbia, MD
Computer Automation
Naked Mini Div
Irvine, CA
Control Data Corp
Minneapolis, MN
Data Electronics Inc
San Diego, CA
Data General Corporation
Westboro, MA
Datapoint Corporation
San Antonio, TX
Data Terminals & Communications
Campbell, CA
Datum Inc
Anaheim, CA
Digital Datacom Inc
Irvine, CA
Digital Equipment Corp
Maynard, MA
EMM Peripheral Prod Div
San Jose, CA
General Telephone Co of the Northwest
Everett, WA
Hewlett-Packard Co
Palo Alto, CA
Hico Horizons Intl Co
Menlo Park, CA
Honeywell Information Systems
Waltham, MA
Innovative Data Technology
San Diego, CA
Intelligent Terminals Inc
Los Altos, CA
Interdyne Co
Van Nuys, CA
Kennedy Co
Monrovia, CA
Memorex Corp
Cupertino, CA
Micro Communications Corp
Waltham, MA
Microcomputer Systems Corp
Sunnyvale, CA
Mohawk Data Sciences Corp
Parsippany, NJ

For further catalog information, turn to
UpDate Service Card, page 201.

Pacific Cyber/Metrix Inc
Dublin, CA
Perkin-Elmer
Oceanport, NJ
Pertec Computer Corp
Peripherals Div
Chatsworth, CA
Plessey Peripheral Systems
Irvine, CA
Qantel Corporation
Hayward, CA
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
Rianda Electronics Ltd
Anaheim, CA
Royal Business Machines Inc
Hartford, CT
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Storage Technology Corp
Louisville, CO
Tektronix Inc
Beaverton, OR
Teletype Corp
Skokie, IL
Texas Instruments Digital Systems Group
Houston, TX
Tri Data
Mountain View, CA
Western Peripherals Inc
Tustin, CA

CASSETTES

MEMOREX CORP
Cupertino, CA **ADV PG 32A**
SIEMENS CORP
Iselin, NJ **ADV PGS 120-121**
American Used Computer Co
Boston, MA
BASF Systems
Bedford, MA
Boston Financial & Equity Corp
Boston, MA
ComData Corp
Skokie, IL
Continental Resources Inc
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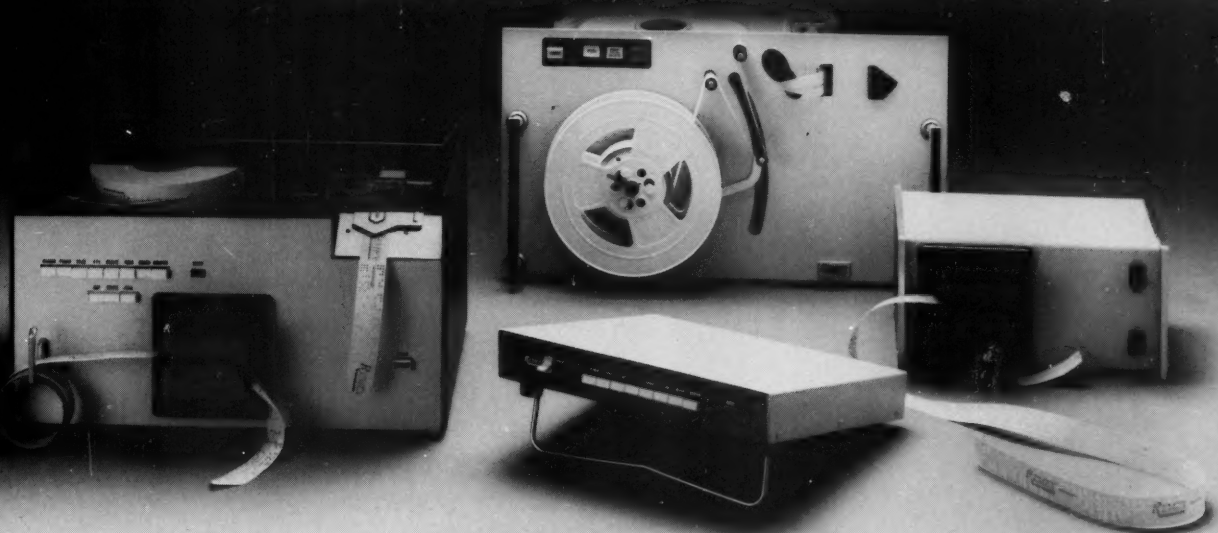
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Pushbutton controls permit automatic tape leader

preparation with just feed holes punched or all holes punched. Duplicate tapes can be generated at the touch of a button.

Portable reader

This reader with built-in RS232C or current-loop interface is ideal for mini/micro-computer program loading. LED's and photo transistors assure rugged reliability. Baud rates range from 110 to 9600, reading continuously to 300 cps at 2400 baud.

High-speed perforator.

This model RQS 6122 system punches at 120 cps while allowing data to be received at up to 1200 baud. It is ideal for remote data logging, numerical control and other applications requiring data communications. A special carbide punch block is designed to punch over 2000 rolls of tape with complete accuracy. It's mylar rated, too!

Nearly 20 years of punched tape experience and nationwide service back up this quality equipment. For more information, contact: Ex-Cell-O Corporation, Remex Division, 1733 E. Alton St., P.O. Box C19533, Irvine, CA 92713. Telephone: (714) 957-0039.

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Terminals

During 1980, the terminal industry has not been wholly without new technical innovation, although new products have evidenced a general trend toward integration of existing technologies. Also, strong competition in the field has bred a wide range of compatible terminals, giving users flexibility in equipment selection—and very competitive prices.

Most terminal vendors, for example, offer terminals that support IBM batch types of operations (in emulation of the IBM 2780/3780), and an increasing number now support IBM interactive operations (also IBM 3270 emulation). Most terminals that support 3270 operation use the binary synchronous, or bisync, protocol, but at least five terminal vendors now incorporate IBM's systems network architecture (SNA) communications procedures to provide this support.

The terminals that have evolved over the past decade are, for the most part, a rather dumb lot, and many of this past year's product announcements have sought to address this deficiency. With microprocessor

and memory components getting cheaper, dumb terminals, in their native state, are becoming a thing of the past. Many vendors now market intelligent terminals—some of which might even be considered minicomputers—so that the amount of processing that can be done at the user site has increased tremendously.

A typical intelligent terminal configuration includes a CRT/keyboard, printer, and communications interface and costs about \$8,000. Such configurations are available from many of the vendors listed in this section.

On the technological front, new products have appeared in recent months that incorporate evolving technologies, as well as new applications of old technologies. One such terminal, from Carroll Manufacturing in Champaign, Ill., utilizes "touch input." Data is inputted simply by touching the surface of the modified display screen. The advantage is that it eliminates the need for trained typists as keyboard operators.

In the area of output, many new terminals have features such as enhanced color graphics displays.

One such product was recently unveiled by Chromatics Inc. of Atlanta, Ga. A new line of miniprinters, for hard-copy output, has come from Centronics Inc., and the Silent 700 series of portable keyboard and display terminals was announced by Texas Instruments.

Another trend in last year's products was the addition of certain functions to existing terminals. These add-on capabilities are usually microprocessor-based and include security encryption and communications. Micom Systems Inc., for example, announced an add-on, data-link-control module, which enhances any terminal's capability to communicate in a high-level network using bit-oriented protocols.

In addition, the smarter terminals were vested with additional software that upgrades and specializes their operations. In many cases, some kind of word processing or text-preparation software was added, while in others (such as in Hewlett-Packard's new 2626A), the capability to partition a single display screen into four different work areas was the enhancement.

New terminal communications offerings support features such as multiple lines from the same terminal and, in some cases, multiple protocols. One such terminal is by ECS Microsystems of San Jose, Calif. In a different mode of communications, new products emerged that utilize radio transmission with a remote host.

Several firms now offer two-way radio computer terminals that combine the ability to access and update databases with the portability of handheld mobile radios. The systems developed so far have calculator-style keyboards linked to RF transceivers. The information, transmitted via FM radio, is sent to a communications controller and converted into a format that can be received by the host computer. At present, binary synchronous (IBM 3270) and asynchronous serial protocols are in operation, with others being developed. Systems from Motorola and from TauMark of Middletown, Wis., are IBM 3270-compatible. Motorola has added forward error detection and correction for the RF link, while TauMark's error handling uses character parity, longitudinal redundancy check (LRC), and character count, with retransmission on any error detection. Another company, Electromagnetic Sciences Inc. of Atlanta, Ga., has entered the field with a terminal compatible with asynchronous communications. For batch-mode applications, there are less costly handheld portable terminals from firms like MSI Data, Telxon, and Azurdata.

What is terminal emulation?

Regardless of the type of terminal or the technology used, the terminal's function is to input user information to a host computer (typically remote) and then output information in a format suitable to the user's needs.

Many data communications users still think that a processor that supports binary synchronous communications can interconnect with most other IBM bisync devices. Nothing could be further from the truth. The actual line protocol (such as bisync, SDLC, or HDLC) is only a part of the communications control that makes up a terminal-emulation module.

Terminal emulation implies that a processor capable

of this emulation can appear as a terminal compatible with another remote processor. For example, a minicomputer capable of IBM 3270 bisync emulation would be able to communicate with a remote host as either a standalone 3270 workstation or a 3271/4/6 remote cluster controller. In rare cases, the emulating processor may also be capable of handling the attachment (local or remote) of 327X displays and 328X printers. Some vendors (Hewlett-Packard, for example) provide emulation software for their minicomputers to communicate with a remote IBM host (as a 3270), but still require that their own terminals be used.

The table shows the communications characteristics of 10 commonly emulated terminal devices. Note that in order to fully emulate a device, the communications control software must take into account many factors peculiar to the terminal besides line protocol. These include the line configurations and facilities required (point-to-point or multipoint, leased or dial-up lines), character code (ASCII, EBCDIC, and so on), output formatting (whether for printer or CRT), type of operation (interactive or batch), data blocking for transmission (usually a part of the line protocol), and error checking (generally also a part of the protocol).

These terminal characteristics are, in most cases, the specifications as published by the manufacturing vendor, but there are variations. Terminal emulators for bisync devices, for example, may implement slightly different record lengths (in the case of 2780 and 3780 emulators) and frequently implement different timeout values (the predefined time that a device awaits an acknowledgment before taking other action).

When a user shops for a distributed system that involves terminal emulation, he should question the vendor to ensure that full emulation and compatibility are included. A vendor may, for instance, provide a microcoded module that handles only the line protocol, leaving the user to write the software for the rest of the terminal-specific communications features.

The table shows the approximate size of the software needed for the device emulation. For simple terminals, such as the asynchronous teletype, 4 kbytes of memory is sufficient to handle the software and buffering for communications control, while up to 30 kbytes is needed for more complex devices (such as SNA-compatible 3270 controllers). Much of this additional memory requirement is due to the complicated software or microcode needed to handle the SDLC protocol and its inherent characteristics of error checking, message sequencing, and special bit-oriented control fields. This disparity in memory requirements makes it frequently unfeasible to implement a complicated terminal emulator on a small distributed processor or intelligent terminal (of, say, 64 kbytes), since this would require that half of its memory be constantly consumed with communications control alone.

When the user needs to implement two or more terminal emulators in the same processor, the problem of communications control is amplified geometrically. This is because the software and processing required to simultaneously handle two very different protocols is larger than the sum of the software necessary to run

Terminal protocol characteristics

SOURCE: INDUSTRIAL COMPUTER CONTROLS INC. CAMBRIDGE, MASS.

TERMINAL TYPE	APPROXIMATE SOFTWARE MEMORY REQUIRED (BYTES)	LINE CONFIGURATION	CHARACTER FRAMING/TIMING	CHARACTER CODE	TYPICAL USE	PRIMARY OUTPUT MEDIUM	FACILITIES	BLOCKING	ERROR CORRECTION
TELETYPE (MODEL 33)	4K	POINT TO POINT	BYTE/ASYNC	ASCII	INTERACTIVE	PRINT	DIAL-UP	UNBLOCKED	CHARACTER PARITY
DEC VT52	4K	POINT TO POINT	BYTE/ASYNC	ASCII	INTERACTIVE	PRINT	DIAL-UP	UNBLOCKED	CHARACTER PARITY
IBM 2741	5K	POINT TO POINT	BYTE/ASYNC	BCD, EBCDIC, CORRESPONDENCE, APL	INTERACTIVE	PRINT	DIAL-UP	UNBLOCKED	CHARACTER PARITY (LRC)
IBM 2780	9K	POINT TO POINT	BYTE/SYNC	ASCII, EBCDIC	BATCH	PRINT	DIAL-UP	SINGLE/DOUBLE RECORD OF 80/132 CHARACTERS	ACK0, ACK1 (BSC-CRC)
IBM 3780	9K	POINT TO POINT	BYTE/SYNC	ASCII, EBCDIC	BATCH	PRINT	DIAL-UP	MULTIRECORD BLOCKS OF 80/132 CHARACTERS EACH	ACK0, ACK1 (BSC-CRC)
BURROUGHS TC/TO SERIES—POLL/SELECT	12K	MULTIPOINT	BYTE/ASYNC AND SYNC	ASCII	INTERACTIVE	CRT	LEASED	BLOCKED	SINGLE ACK (LRC)
IBM 3275 (BSC)	13K	POINT TO POINT	BYTE/SYNC	ASCII, EBCDIC	INTERACTIVE	CRT	DIAL-UP	BLOCKED	ACK0, ACK1 (BSC-CRC)
UNIVAC V100/200	16K	MULTIPOINT	BYTE/SYNC	ASCII, WITH SPECIAL CHARACTERS	INTERACTIVE	CRT	LEASED	UNBLOCKED	DELAYED ACK (CRC)
IBM 3271/4/5 (BSC)	16K	MULTIPOINT	BYTE/SYNC	ASCII, EBCDIC	INTERACTIVE	CRT	LEASED	BLOCKED	ACK0, ACK1 (BSC-CRC)
IBM 3270/4/5 SNA-SOLC	30K	MULTIPOINT, POINT TO POINT	BIT-ORIENTED	ASCII, EBCDIC	INTERACTIVE	CRT	LEASED (DIAL-UP IF POINT TO POINT)	BLOCKED	GO BACK 'N' WHERE N < 7 (CCITT-CRC)

each emulator individually. (This is reportedly one of the problems now being faced by AT&T's programmers working on software for the ACS network.)

For users whose distributed processors must be able to operate more than one terminal emulator from the same site, there are several alternatives. One is to off-load the communications software from the processor (which could even be an intelligent terminal) via a protocol converter, but this generally requires that an unsavory price be paid in terms of response time and throughput efficiency. Yet another method is to divide the emulator software into discrete modules so that the individual emulators can be spooled into the processor (say, from a diskette) one at a time as required. The drawback in this case is the start-up time for the terminal operator. It may take a few minutes to load or change protocols, but this can be viewed as a necessary trade-off in order to switch constantly between several different mainframes. ■

For more on terminals, see the following DATA COMMUNICATIONS articles.

1. "As terminal types multiply, so do problems of selection," Donald H. Haback, July 1978, p. 53. Choosing the proper data communications terminal is a complicated job. This article contains some tips for ensuring the right choice.
2. "Considering human needs can boost network efficiency," Philip G. Elam, October 1978, p. 51. Terminals engineered with operators in mind can make the difference between a busy interactive network and a network that people hate to use.
3. "Intelligent terminal standards could enhance net efficiency," Daniel Minoli, November 1979, p. 59. The author discusses terminal types and a proposed set of rules governing their implementation.
4. "Drawing a deep breath for next year's advances," Ray Sarch, December 1979, p. 71. Compare 1980's products with this projection of upcoming technological innovations, including effects on terminals.
5. "DDP problems—Some solutions are within reach," Terry D. Pardoe, November 1979, p. 89. Terminal selection, among other factors, plays a large role in the efficiency of a DDP network.

AUDIO RESPONSE UNITS

ASI Teleprocessing
Watertown, MA
Centigram Corp
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Sub of HI-G Inc
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Triformation Systems Inc
Stuart, FL

For further catalog information, turn to
Update Service Card, page 201.

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NCR Corp
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Data Communications Div
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Hetra Computer & Communications
Industries Inc
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Palo Alto, CA
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Seattle, WA
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MFE Corp
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Parsippany, NJ
MSI Data Corp
Costa Mesa, CA
NCR Comten Inc
St Paul, MN
NCR Corp
Dayton, OH
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Olivetti Corp
Tarrytown, NY
Paradyne Corp
Largo, FL
Perkin-Elmer Terminals Div
Flanders, NJ

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 Qantel Corporation
 Hayward, CA
 Radian Corp-Unitech Products
 Austin, TX
 Southern New England Telephone Co
 New Haven, CT
 Sperry Univac
 Blue Bell, PA
 Sperry Univac, MCO
 Irvine, CA
 Tab Products Co
 Palo Alto, CA
 Techtran Industries
 Rochester, NY
 Tektronix Inc
 Beaverton, OR
 Teletype Corp
 Skokie, IL
 Terminal Specialties Inc
 Salt Lake City, UT
 Wang Laboratories Inc
 Lowell, MA

DATA ENTRY TERMINALS

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INNOVATIVE ELECTRONICS INC
 Miami Lakes, FL **ADV PG 142**
MEMOREX CORP
 Cupertino, CA **ADV PG 32A**
RACAL-MILGO
 Miami, FL **ADV PGS 30-31**
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 Tucson, AZ **ADV PG 126**
 Acro Corporation
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 Anderson Jacobson
 San Jose, CA
 Ann Arbor Terminals
 Ann Arbor, MI
 AT&T
 Morris Plains, NJ
 Aydin Controls
 Ft Washington, PA
 BMS Data Handling Inc
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 Mini-Peripherals Div
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 ECI Div.
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 Tustin, CA
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 Manchester, NH
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 Waltham, MA
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 Norcross, GA
 Intertec Data Systems Corporation
 Columbia, SC
 ITT Courier Terminal Systems Inc
 Tempe, AZ
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 Cupertino, CA
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 Largo, FL
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 Bohemia, NY

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 Concord, CA
 Rental Electronics Inc
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 Selanar Corp
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If you want to know what other
 products a company makes, turn
 to **Vendor Directory, page 301.**

Singer Co
 Librascope Div
 Glendale, CA
 Tektronix Inc
 Beaverton, OR
 Versatec Inc
 Santa Clara, CA
 Wang Laboratories Inc
 Lowell, MA
 Xerox Corporation
 Stanford, CT

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SIEMENS CORP

Iselin, NJ **ADV PGS 120-121**

Alden Electronic & Impulse
 Recording Equipment Co Inc
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 Electronic Interface Assoc Inc
 New York, NY
 E-Systems Inc
 Garland Div
 Garland, TX
 Muirhead Inc
 Mountainside, NJ
 NEC America Inc
 New York, NY
 Panafax Corp
 Woodbury, NY
 Qwip Systems/Div Exxon
 Orlando, FL
 Rapicom Inc
 Fairfield, NJ
 Siemens Corp
 Iselin, NJ
 Southern Pacific Distributed Message
 Systems
 McLean, VA
 SP Communications
 Burlingame, CA
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 Los Angeles, CA
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DATA ACCESS SYSTEMS INC

Blackwood, NJ **ADV PG 123**

TEC INC

Tucson, AZ **ADV PG 126**

Adage Inc
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 Advanced Electronics Design Inc
 Sunnyvale, CA
 Alden Electronic & Impulse
 Recording Equipment Co Inc
 Westboro, MA
 American Used Computer Co
 Boston, MA
 Ann Arbor Terminals
 Ann Arbor, MI
 Applied Systems Corp
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 Covina, CA
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 Minneapolis, MN
 Data Access Systems Inc
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 Western Development Lab Div
 Palo Alto, CA
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 Carleton Pl, ON
 Harris Corp
 Composition Systems Div
 Melbourne, FL
 Hewlett-Packard Co
 Palo Alto, CA
 Human Design Systems Inc
 Philadelphia, PA
 Intelligent Systems Corp
 Norcross, GA
 Interstate Electronics Corp
 Anaheim, CA
 Lear Siegler Inc/Data Products Div
 Anaheim, CA
 Leasametric
 Foster City, CA
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 Waltham, MA
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 Burlington, MA
 Lundy Electronics & Systems Inc
 Glen Head, NY
 Magnavox Government & Ind Electronics Co
 Magnavox Display Systems
 Ft Wayne, IN
 Megadata Corp
 Bohemia, NY
 Megatek
 San Diego, CA
 Perkin-Elmer
 Oceanport, NJ
 PolyMorphic Systems
 Santa Barbara, CA
 Ramtek Corp
 Santa Clara, CA
 RCA Global Communications Inc
 New York, NY
 Rental Electronics Inc
 Palo Alto, CA
 Sanders Associates Inc
 Information Products Div
 Nashua, NH
 Selanar Corp
 Santa Clara, CA
 Singer Co
 Librascope Div
 Glendale, CA
 Southern New England Telephone Co
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 Southern Pacific Distributed Message
 Systems
 McLean, VA
 TEC Inc
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 Tektronix Inc
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Transnet Corp
 Union, NJ
 Unicom Computer Corporation
 Sausalito, CA
 Wang Laboratories Inc
 Lowell, MA

PROGRAMMABLE TERMINALS

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CODEX CORPORATION

Mansfield, MA **ADV PGS 5,34-35**

COMPUTER COMMUNICATIONS INC

Torrance, CA **ADV PG 41**

DATA ACCESS SYSTEMS INC

Blackwood, NJ **ADV PG 123**

DIGILOG SYSTEMS INC

Network Control Div
 Horsham, PA **ADV PG 81**

GENERAL ELECTRIC CO —

COMMUNICATION EQUIPMENT

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MANNESMANN TALLY

Kent, WA **ADV PG 124**

MOHAWK DATA SCIENCES CORP

Parsippany, NJ **ADV PG 122**

NEC INFORMATION SYSTEMS INC

Lexington, MA **ADV PG 6**

RACAL-MILGO

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American Satellite Company

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Memory Products Div

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Applied Digital Data Systems Inc

Hempstead, NY

Applied Systems Corp

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Beehive International

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Boston Financial & Equity Corp

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The Braegen Corp

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Bunker Ramo Corp/Info Sys Div

Trumbull, CT

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Cambridge Telecommunications

Burlington, MA

Carterfone Communications Corp

Dallas, TX

Chess

Denver, CO

Cincinnati Electronics Corp

Cincinnati, OH

CMC Marketing Corp
Houston, TX
Coastal Data Products
Miami, FL
Codex Corporation
Mansfield, MA
Columbia Data Products
Columbia, MD
Comark Corp
Waltham, MA
Commtec Inc
Crofton, MD
Communications Interface Inc
Minneapolis, MN
Computeek Inc
Burlington, MA
Computer Automation
Naked Mini Div
Irvine, CA
Computer Communications Inc
Torrance, CA
Computer Devices Inc
Burlington, MA
Computer-Link Corp
Burlington, MA
Comtal Corp
Pasadena, CA
Comtec Information Systems Inc
Cumberland, RI
Continental Resources Inc
Bedford, MA
Crown Communications Inc
Dallas, TX
Custom Terminals
Hauppauge, NY
Data Access Systems Inc
Blackwood, NJ
Data Dimensions Inc
Norwalk, CT
Data General Corporation
Westboro, MA
Datamedia Corp
Pennsauken, NJ
Datapoint Corporation
San Antonio, TX
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Data Terminals & Communications
Campbell, CA
David Jamison Carlyle Corp
Los Angeles, CA
Delta Data Systems
Cornwell Heights, PA
Digilog Systems Inc
Micro Computer Div
Horsham, PA
DigiLog Systems Inc, Network Control Div
Horsham, PA
Digital Equipment Corp
Maynard, MA
Durango Systems Inc
San Jose, CA
ECS Microsystems
San Jose, CA
Electro Rent
Burbank, CA
Epic Data Corp
Richmond, BC
E-Systems Inc
Garland Div
Garland, TX
Extel Corp.
Northbrook, IL
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Four-Phase Systems Inc
Cupertino, CA
GDS Inc
Seattle, WA

General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of Kentucky
Lexington, KY
General Terminal Corp
Tustin, CA
GNAT Computers, Inc.
San Diego, CA
Goodwood Data Systems
Carleton Pl, ON
GTE Comp-Acct
Anaheim, CA
Harris Corp
Data Communications Div
Dallas, TX
Hawaiian Telephone Co
Honolulu, HI
Heath Co
Benton Harbor, MI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Human Design Systems Inc
Philadelphia, PA
IESI Inc
Seattle, WA
Informer Inc
Los Angeles, CA
Intelligent Systems Corp
Norcross, GA
Intelligent Terminals Inc
Los Altos, CA
Interstate Electronics Corp
Anaheim, CA
Intertec Data Systems Corporation
Columbia, SC
Lantor Inc
Playa Del Rey, CA
Lear Siegler Inc/Data Products Div
Anaheim, CA
Leasametric
Foster City, CA
Lexicon Inc
Waltham, MA
Lundy Electronics & Systems Inc
Glen Head, NY
Magnavox Government & Ind Electronics Co
Magnavox Display Systems
Ft Wayne, IN
Mannesmann Tally
Kent, WA
Megadata Corp
Bohemia, NY
Mohawk Data Sciences Corp
Parsippany, NJ
Motorola Semiconductor Prod
Phoenix, AZ
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
NEC Information Systems Inc
Lexington, MA
Northern Telecom Systems Corp
Minneapolis, MN
Nu Data Corp
Little Silver, NJ
Olivetti Corp
Tarrytown, NY
Ontel Corp
Woodbury, NY
Peripherals Corp
Bohemia, NY
Perkin-Elmer
Oceanport, NJ
Perkin-Elmer Terminals Div
Flanders, NJ

Qantel Corporation
Hayward, CA
Qume Corp
San Jose, CA
Racal-Milgo
Miami, FL
Radian Corp-Unitech Products
Austin, TX
Ramtek Corp
Santa Clara, CA
Raytheon Data Systems/Terminal Div
Norwood, MA
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
RCA Service Co
Data Services
Cherry Hill, NJ
Rental Electronics Inc
Palo Alto, CA
Royal Business Machines Inc
Hartford, CT
Sanders Associates Inc
Information Products Div
Nashua, NH
SCI Systems Inc
Huntsville, AL
Selecterm Inc
Wakefield, MA
Singer Co
Librascope Div
Glendale, CA
Solid State Technology Inc
Woburn, MA
Soroc Technology Inc
Anaheim, CA
Southern New England Telephone Co
New Haven, CT
Southern Telephone Supply
Atlanta, GA
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Sperry Univac
Blue Bell, PA
Sperry Univac, MCO
Irvine, CA
Systems Research Inc
Okemos, MI
Tab Products Co
Palo Alto, CA
Techtran Industries
Rochester, NY
Tektronix Inc
Beaverton, OR
Teleray Div
Research Inc
Minneapolis, MN
Tel-Tex Inc
Houston, TX
Termiflex Corp
Nashua, NH
Terminal Data Corp
Rockville, MD
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Transcom Inc
Sub of HI-G Inc
Windsor Locks, CT
Transnet Corp
Union, NJ
Triformation Systems Inc
Stuart, FL
The TRW-Fujitsu Co
Los Angeles, CA
Tymnet Inc
Cupertino, CA
Vardon & Associates
Irving, TX

Wang Laboratories Inc
Lowell, MA
Xerox Corporation
Stanford, CT
Zentec
Santa Clara, CA

INTERACTIVE TERMINALS

GENERAL ELECTRIC CO — COMMUNICATION EQUIPMENT LEASING AND SERVICE

Schenectady, NY . . . ADV PGS 152-153

GENERAL ELECTRIC CO DATA COMM PROD DEPT

Waynesboro, VA ADV PG 125

MANNESMANN TALLY

Kent, WA ADV PG 124

MEMOREX CORP

Cupertino, CA ADV PG 32A

MOHAWK DATA SCIENCES CORP

Parsippany, NJ ADV PG 122

NEC INFORMATION SYSTEMS INC

Lexington, MA ADV PG 6

RACAL-MILGO

Miami, FL ADV PGS 30-31

TEC INC

Tucson, AZ ADV PG 126

Acro Corporation

Irvine, CA

Adage Inc

Billerica, MA

Agile Corp

Sunnyvale, CA

Anderson Jacobson

San Jose, CA

Applied Digital Data Systems Inc

Hauppauge, NY

AT&T

Morris Plains, NJ

Aydin Controls

Ft Washington, PA

Beehive International

Salt Lake City, UT

The Braegen Corp

Cupertino, CA

Bunker Ramo Corp/Info Sys Div

Trumbull, CT

Cado Systems Corp

Torrance, CA

California Computer Products Inc

Anaheim, CA

Chess

Denver, CO

Cincinnati Electronics Corp

Cincinnati, OH

CMC Marketing Corp

Houston, TX

Columbia Data Products

Columbia, MD

Communications Interface Inc

Minneapolis, MN

Computer Automation

Naked Mini Div

Irvine, CA

Computer Devices Inc

Burlington, MA

Computer Transceiver Systems Inc

Paramus, NJ

Comtal Corp

Pasadena, CA

Continental Resources Inc

Bedford, MA

Data Communications Corp

Memphis, TN

Data General Corporation

Westboro, MA

Datagraphix Inc

San Diego, CA

Datagraphix Inc/Display Dept

San Diego, CA

Datapoint Corporation

San Antonio, TX

Dataproducts New England

Wallingford, CT

Data Rentals/Sales Inc

Culver City, CA

Dataroyal

Nashua, NH

David Jamison Carlyle Corp

Los Angeles, CA

Delta Data Systems

Cornwell Heights, PA

Di/An Controls Inc

Boston, MA

Digital Equipment Corp

Maynard, MA

DMC Systems Inc

Santa Clara, CA

Durango Systems Inc

San Jose, CA

Electronic Interface Assoc Inc

New York, NY

Epic Data Corp

Richmond, BC

Evans & Sutherland Computer Corp

Salt Lake City, UT

Ford Aerospace and Communications Corp

Western Development Lab Div

Palo Alto, CA

Four-Phase Systems Inc

Cupertino, CA

Gamma Technology Inc

Palo Alto, CA

GDS Inc

Seattle, WA

General Automation

Anaheim, CA

General Electric Co/Communication

Equipment Leasing and Service

Schenectady, NY

General Electric Co

Data Comm Prod Dept

Waynesboro, VA

General Telephone Co of the Northwest

Everett, WA

Goodwood Data Systems

Carleton Pl, ON

GTE Comp-Acct

Anaheim, CA

GTE Telenet Communications Corp

Vienna, VA

Harris Corp

Composition Systems Div

Melbourne, FL

Hawaiian Telephone Co

Honolulu, HI

Hewlett-Packard Co

Palo Alto, CA

Honeywell Information Systems

Waltham, MA

IESI Inc

Seattle, WA

Intertec Data Systems Corporation

Columbia, SC

ITT Courier Terminal Systems Inc

Tempe, AZ

Lear Siegler Inc/Data Products Div

Anaheim, CA

Leasametric

Foster City, CA

Lundy Electronics & Systems Inc

Glen Head, NY

Magnavox Government & Ind Electronics Co

Magnavox Display Systems

Ft Wayne, IN

Mannesmann Tally

Kent, WA

MDS/Trivex

Costa Mesa, CA

Megatek

San Diego, CA

Memorex Corp

Cupertino, CA

Microdata Corporation

Irvine, CA

Mohawk Data Sciences Corp

Parsippany, NJ

NCR Corp

Dayton, OH

NEC Information Systems Inc

Lexington, MA

New England Telephone & Telegraph Co

Boston, MA

New Jersey Bell Telephone Co

Newark, NJ

Northern Telecom Systems Corp

Minneapolis, MN

Nu Data Corp

Little Silver, NJ

Olivetti Corp

Tarrytown, NY

Ontel Corp

Woodbury, NY

Perkin-Elmer

Oceanport, NJ

Perkin-Elmer Terminals Div

Flanders, NJ

Pertec Computer Corp

Los Angeles, CA

Plessey Peripheral Systems

Irvine, CA

PolyMorphic Systems

Santa Barbara, CA

Prime Computer Inc

Natick, MA

Qantel Corporation

Hayward, CA

Racal-Milgo

Miami, FL

Ramtek Corp

Santa Clara, CA

Royal Business Machines Inc

Hartford, CT

Sanders Associates Inc

Information Products Div

Nashua, NH

SCI Systems Inc

Huntsville, AL

Selanar Corp

Santa Clara, CA

Selecterm Inc

Wakefield, MA

Singer Co

Librascope Div

Glendale, CA

Southern New England Telephone Co

New Haven, CT

Sperry Univac

Blue Bell, PA

Sperry Univac, MCO

Irvine, CA

Tab Products Co

Palo Alto, CA

TEC Inc

Tucson, AZ

Tektronix Inc

Beaverton, OR

Teleray Div

Research Inc

Minneapolis, MN

Telex Computer Products Inc

Tulsa, OK

Termiflex Corp

Nashua, NH

Terminal Specialties Inc

Salt Lake City, UT

Transcom Inc

Sub of HI-G Inc

Windsor Locks, CT

Transnet Corp

Union, NJ

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

Trendata/Standard Memories
Santa Ana, CA
The TRW-Fujitsu Co
Los Angeles, CA
Wang Laboratories Inc
Lowell, MA
The Western Union Telegraph Co
Upper Saddle River, NJ
Xerox Corporation
Stanford, CT
Zitel Corp
San Jose, CA

POINT OF SALE TERMINALS

Applied Delta Systems Inc
Bellmawr, NJ
GTE Comp-Acct
Anaheim, CA
NCR Corp
Dayton, OH

PORTABLE DATA ENTRY TERMINALS

DATA ACCESS SYSTEMS INC
Blackwood, NJ **ADV PG 123**
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY **ADV PGS 152-153**
MANNESMANN TALLY
Kent, WA **ADV PG 124**

Applied Systems Corp
St Claire Shores, MI
Azurdata Inc
Redmond, WA
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
Computer Devices Inc
Burlington, MA
Computer Transceiver Systems Inc
Paramus, NJ
Computing Devices Div
Control Data Corp
Ottawa, ON
Custom Terminals
Hauppauge, NY
Data Access Systems Inc
Blackwood, NJ
Datamedia Corp
Pennsauken, NJ
David Jamison Carlyle Corp
Los Angeles, CA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Electronic Interface Assoc Inc
New York, NY
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of the Northwest
Everett, WA
GTE Telenet Communications Corp
Vienna, VA
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Human Design Systems Inc
Philadelphia, PA
IESI Inc
Seattle, WA

Interface Systems Inc
Ann Arbor, MI
Leasametric
Foster City, CA
Mannesmann Tally
Kent, WA
Micon Industries
Oakland, CA
Modular Computer Systems
Fort Lauderdale, FL
MSI Data Corp
Costa Mesa, CA
MTI Sales Corp
Great Neck, NY
Nu Data Corp
Little Silver, NJ
Recognition Equipment Inc
Dallas, TX
Rental Electronics Inc
Palo Alto, CA
SCI Systems Inc
Huntsville, AL
Selecterm Inc
Wakefield, MA
Singer Co
Librascope Div
Glendale, CA
Southern New England Telephone Co
New Haven, CT
Southern Pacific Distributed Message
Systems
McLean, VA
Techtran Industries
Rochester, NY
Tel-Tex Inc
Houston, TX
Termiflex Corp
Nashua, NH
Terminal Data Corp
Rockville, MD
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Transcom Inc
Sub of HI-G Inc
Windsor Locks, CT
Transnet Corp
Union, NJ
U S Instrumental Rentals
San Mateo, CA
Wang Laboratories Inc
Lowell, MA

REMOTE LINE PRINTERS

GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY **ADV PGS 152-153**
GENERAL ELECTRIC CO
DATA COMM PROD DEPT
Waynesboro, VA **ADV PG 125**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
MANNESMANN TALLY
Kent, WA **ADV PG 124**
MEMOREX CORP
Cupertino, CA **ADV PG 32A**
NEC INFORMATION SYSTEMS INC
Lexington, MA **ADV PG 6**
Acro Corporation
Irvine, CA
American Used Computer Co
Boston, MA
Anadex Inc
Chatsworth, CA
Anderson Jacobson
San Jose, CA

AT&T
Morris Plains, NJ
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
Braegen Corp
Mini-Peripherals Div
Anaheim, CA
W A Brown Instruments
Orlando, FL
Cado Systems Corp
Torrance, CA
Cal Datacom
Santa Ana, CA
Centronics Data Computer Corp
Hudson, NH
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
Communications Interface Inc
Minneapolis, MN
Continental Resources Inc
Bedford, MA
Control Data Corp
Minneapolis, MN
Data General Corporation
Westboro, MA
Datametrics Corp
Van Nuys, CA
Datapoint Corporation
San Antonio, TX
Data Printer Corp
Malden, MA
Dataproducts Corporation
Woodland Hills, CA
Dataproducts New England
Wallingford, CT
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
David Jamison Carlyle Corp
Los Angeles, CA
Decision Data Computer Corp
Horsham, PA
Digital Associates Corp
Stamford, CT
Digital Datacom Inc
Irvine, CA
Digital Equipment Corp
Maynard, MA
Documation Inc
Melbourne, FL
Durango Systems Inc
San Jose, CA
Eaton-LRC
Riverton, WY
Electronic Interface Assoc Inc
New York, NY
E-Systems Inc.
ECI Div.
St. Petersburg, FL
Extel Corp.
Northbrook, IL
Florida Data Corp
Melbourne, FL
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA

For further catalog information, turn to
UpDate Service Card, page 201.

Honeywell Information Systems

Waltham, MA
 Innovative Electronics Inc
 Miami Lakes, FL
 Intelligent Systems Corp
 Norcross, GA
 Interface Mechanisms Inc
 Lynnwood, WA
 Interface Systems Inc
 Ann Arbor, MI
 CD Johnson/Assoc Ltd
 Ottawa, ON
 Mannesmann Tally
 Kent, WA
 MDS/Trivex
 Costa Mesa, CA
 Memorex Corp
 Cupertino, CA
 MTI Sales Corp
 Great Neck, NY
 NCR Comten Inc
 St Paul, MN
 NCR Corp
 Dayton, OH
 NEC Information Systems Inc
 Lexington, MA
 New Jersey Bell Telephone Co
 Newark, NJ
 Okidata Corp
 Mt Laurel, NJ
 Olivetti Corp
 Tarrytown, NY
 Paradyne Corp
 Largo, FL
 Plessy Peripheral Systems
 Irvine, CA
 Printer Systems Corp
 Gaithersburg, MD
 Printronix Inc
 Irvine, CA
 Qantel Corporation
 Hayward, CA
 Quad Systems Inc
 Gaithersburg, MD
 Qume Corp
 San Jose, CA
 Raytheon Data Systems
 Mini-Computer Div
 Mansfield, MA
 Rental Electronics Inc
 Palo Alto, CA
 Royal Business Machines Inc
 Hartford, CT
 Selanar Corp
 Santa Clara, CA
 Southern New England Telephone Co
 New Haven, CT
 Sperry Univac
 Blue Bell, PA
 Tektronix Inc
 Beaverton, OR
 Teletype Corp
 Skokie, IL
 Telex Computer Products Inc
 Tulsa, OK
 Terminal Specialties Inc
 Salt Lake City, UT
 Texas Instruments Digital Systems Group
 Houston, TX
 Trans-Lux Corp
 Norwalk, CT
 Transnet Corp
 Union, NJ
 Unicom Computer Corporation
 Sausalito, CA
 Versatec Inc
 Santa Clara, CA
 Wang Laboratories Inc
 Lowell, MA

REMOTE JOB ENTRY TERMINALS

GENERAL ELECTRIC CO
 DATA COMM PROD DEPT
 Waynesboro, VA ADV PG 125
 MANNESMANN TALLY
 Kent, WA ADV PG 124
 MOHAWK DATA SCIENCES CORP
 Parsippany, NJ ADV PG 122
 RACAL-MILGO
 Miami, FL ADV PGS 30-31
 SIEMENS CORP
 Iselin, NJ ADV PGS 120-121
 TEC INC
 Tucson, AZ ADV PG 126
 American Used Computer Co
 Boston, MA
 AM Jacquard Systems
 Santa Monica, CA
 Anderson Jacobson
 San Jose, CA
 Azurdata Inc
 Redmond, WA
 Beehive International
 Salt Lake City, UT
 Billings Computer Corporation
 Provo, UT
 Boston Financial & Equity Corp
 Boston, MA
 The Braegen Corp
 Cupertino, CA
 Cado Systems Corp
 Torrance, CA
 Cal Datacom
 Santa Ana, CA
 Cambridge Telecommunications
 Burlington, MA
 Centronics Data Computer Corp
 Hudson, NH
 Chatsworth Data Corp
 Chatsworth, CA
 Chess
 Denver, CO
 Cincinnati Bell
 Cincinnati, OH
 Coastal Data Products
 Miami, FL
 Communications Interface Inc
 Minneapolis, MN
 Computer Devices Inc
 Burlington, MA
 Computer-Link Corp
 Burlington, MA
 Computer Transceiver Systems Inc
 Paramus, NJ
 Comtec Information Systems Inc
 Cumberland, RI
 Continental Resources Inc
 Bedford, MA
 Danyl Corp
 Pennsauken, NJ
 Data Communications Corp
 Memphis, TN
 Data Dimensions Inc
 Norwalk, CT
 Data Equipment Inc
 Sunnyvale, CA
 Data General Corporation
 Westboro, MA
 Datapoint Corporation
 San Antonio, TX
 Dataroyal
 Nashua, NH
 Data Terminals & Communications
 Campbell, CA
 Decision Data Computer Corp
 Horsham, PA
 Delta Data Systems
 Cornwall Heights, PA
 Diablo Systems Inc A Xerox Co
 Hayward, CA
 Digilog Systems Inc
 Micro Computer Div
 Horsham, PA

Documation Inc
 Melbourne, FL
 Durango Systems Inc
 San Jose, CA
 Electronic Interface Assoc Inc
 New York, NY
 Extel Corp
 Northbrook, IL
 Four-Phase Systems Inc
 Cupertino, CA
 Gamma Technology Inc
 Palo Alto, CA
 General Automation
 Anaheim, CA
 General Electric Co
 Data Comm Prod Dept
 Waynesboro, VA
 General Telephone Co of Kentucky
 Lexington, KY
 General Telephone Co of the Northwest
 Everett, WA
 Harris Corp
 Composition Systems Div
 Melbourne, FL
 Harris Corp
 Data Communications Div
 Dallas, TX
 Hetra Computer & Communications
 Industries Inc
 Melbourne, FL
 Hewlett-Packard Co
 Palo Alto, CA
 Honeywell Information Systems
 Waltham, MA
 IESI Inc
 Seattle, WA
 Informer Inc
 Los Angeles, CA
 Interstate Electronics Corp
 Anaheim, CA
 Intertec Data Systems Corporation
 Columbia, SC
 Lantor Inc
 Playa Del Rey, CA
 Mannesmann Tally
 Kent, WA
 Mohawk Data Sciences Corp
 Parsippany, NJ
 MTI Sales Corp
 Great Neck, NY
 NCR Comten Inc
 St Paul, MN
 NCR Corp
 Dayton, OH
 Northern Telecom Systems Corp
 Minneapolis, MN
 Olivetti Corp
 Tarrytown, NY
 Ontel Corp
 Woodbury, NY
 Paradyne Corp
 Largo, FL
 Perkin-Elmer
 Oceanport, NJ
 Pertec Computer Corp
 Los Angeles, CA
 Plessy Peripheral Systems
 Irvine, CA
 Prime Computer Inc
 Natick, MA
 Printer Systems Corp
 Gaithersburg, MD
 Qantel Corporation
 Hayward, CA
 Racal-Milgo
 Miami, FL
 Radian Corp-Unitech Products
 Austin, TX
 Raytheon Data Systems/Terminal Div
 Norwood, MA
 Raytheon Data Systems
 Mini-Computer Div
 Mansfield, MA
 SCI Systems Inc
 Huntsville, AL

Siemens Corp
Iselin, NJ
Southern New England Telephone Co
New Haven, CT
Sperry Univac
Blue Bell, PA
Syntest Corporation
Marlboro, MA
Tab Products Co
Palo Alto, CA
Techtran Industries
Rochester, NY
TEC Inc
Tucson, AZ
Telecommunications Technology Inc
Sunnyvale, CA
Tel-Tex Inc
Houston, TX
Termiflex Corp
Nashua, NH
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Unicom Computer Corporation
Sausalito, CA
US Instrumental Rentals
San Mateo, CA
Vardon & Associates
Irving, TX
Wang Laboratories Inc
Lowell, MA
Xerox Corp
El Segundo, CA

TELEPRINTERS

**GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE**
Schenectady, NY . . . **ADV PGS 152-153**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
SIEMENS CORP
Iselin, NJ **ADV PGS 120-121**
Anderson Jacobson
San Jose, CA
AT&T
Morris Plains, NJ
W A Brown Instruments
Orlando, FL
Chess
Denver, CO
CMC Marketing Corp
Houston, TX
Crown Communications Inc
Dallas, TX
Data General Corporation
Westboro, MA
Datametrics Corp
Van Nuys, CA
Dataproducts New England
Wallingford, CT
Data Rentals/Sales Inc
Culver City, CA
Data Specialties Inc
Northbrook, IL
David Jamison Carlyle Corp
Los Angeles, CA
Di/An Controls Inc
Boston, MA
E-Systems Inc.
ECI Div.
St. Petersburg, FL
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
Hawaiian Telephone Co
Honolulu, HI

Innovative Electronics Inc
Miami Lakes, FL
Leasametric
Foster City, CA
New England Telephone & Telegraph Co
Boston, MA
New Jersey Bell Telephone Co
Newark, NJ
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
Selecterm Inc
Wakefield, MA
Siemens Corp
Iselin, NJ
Southern New England Telephone Co
New Haven, CT
Telex Computer Products Inc
Tulsa, OK
Transnet Corp
Union, NJ
Vardon & Associates
Irving, TX

TELEPRINTERS, IMPACT

**ALANTHUS DATA COMMUNICATIONS
CORP**
Rockville, MD **ADV PG 32B**
DATA ACCESS SYSTEMS INC
Blackwood, NJ **ADV PG 123**
**GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE**
Schenectady, NY . . . **ADV PGS 152-153**
GENERAL ELECTRIC CO
DATA COMM PROD DEPT
Waynesboro, VA **ADV PG 125**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
MANNESMANN TALLY
Kent, WA **ADV PG 124**
NEC INFORMATION SYSTEMS INC
Lexington, MA **ADV PG 6**
RACAL-MILGO
Miami, FL **ADV PGS 30-31**
RCA SERVICE CO
DATA SERVICES
Cherry Hill, NJ **ADV PG 154**
SIEMENS CORP
Iselin, NJ **ADV PGS 120-121**
Agile Corp
Sunnyvale, CA
Alanthus Data Communications Corp
Rockville, MD
American Terminal Leasing Co
Boston, MA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Anadex Inc
Chatsworth, CA
Anderson Jacobson
San Jose, CA
Applied Systems Corp
St. Claire Shores, MI
AT&T
Morris Plains, NJ
Boston Financial & Equity Corp
Boston, MA
W A Brown Instruments
Orlando, FL
C & L Terminals Inc
Portland, OR
Carterfone Communications Corp
Dallas, TX
Centronics Data Computer Corp
Hudson, NH
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH

CMC Marketing Corp
Houston, TX
ComData Corp
Skokie, IL
CompuTek Inc
Burlington, MA
Continental Resources Inc
Bedford, MA
Crown Communications Inc
Dallas, TX
Data Access Systems Inc
Blackwood, NJ
Data Dimensions Inc
Norwalk, CT
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
Dataproducts Corporation
Woodland Hills, CA
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
Data Terminals & Communications
Campbell, CA
David Jamison Carlyle Corp
Los Angeles, CA
Decision Data Computer Corp
Horsham, PA
Diablo Systems Inc A Xerox Co
Hayward, CA
Di/An Controls Inc
Boston, MA
Digital Equipment Corp
Maynard, MA
DMC Systems Inc
Santa Clara, CA
Durango Systems Inc
San Jose, CA
Eat-on-LRC
Riverton, WY
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
E-Systems Inc.
ECI Div.
St. Petersburg, FL
Extel Corp.
Northbrook, IL
Facit Inc
Greenwich, CT
First Computer Corp
Westmont, IL
Florida Data Corp
Melbourne, FL
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
GDS Inc
Seattle, WA
General Automation
Anaheim, CA
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
Hawaiian Telephone Co
Honolulu, HI
Heath Co
Benton Harbor, MI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA

Innovative Electronics Inc
Miami Lakes, FL
Integral Data Systems Inc
Natick, MA
ITT Business Sys & Comm Grp
New York, NY
CD Johnson/Assoc Ltd
Ottawa, ON
Lantor Inc
Playa Del Rey, CA
Lear Siegler Inc/Data Products Div
Anaheim, CA
Leasametric
Foster City, CA
Mannesmann Tally
Kent, WA
Megadata Corp
Bohemia, NY
MPI
Salt Lake City, UT
NCR Comten Inc
St Paul, MN
NEC Information Systems Inc
Lexington, MA
Okidata Corp
Mt Laurel, NJ
Olivetti Corp
Tarrytown, NY
Paradyne Corp
Largo, FL
Perkin-Elmer Terminals Div
Flanders, NJ
Plessey Peripheral Systems
Irvine, CA
Prime Computer Inc
Natick, MA
Printer Systems Corp
Gaithersburg, MD
Printer Terminal Communications Corp
Ramona, CA
Racal-Milgo
Miami, FL
Ramtek Corp
Santa Clara, CA
RCA Service Co; Data Services
Cherry Hill, NJ
Sanders Technology
Nashua, NH
Selanar Corp
Santa Clara, CA
Selecterm Inc
Wakefield, MA
Siemens Corp
Iselin, NJ
Southern New England Telephone Co
New Haven, CT
Syntest Corporation
Marlboro, MA
Teletype Corp
Skokie, IL
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Trans-Lux Corp
Norwalk, CT
Trendata/Standard Memories
Santa Ana, CA
Tymnet Inc
Cupertino, CA
Vector Graphic Inc
Westlake Village, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

Westrex Oem Products
West Caldwell, NJ
Xerox Corp
El Segundo, CA
Xerox Corporation
Stanford, CT

TELEPRINTERS, NON-IMPACT

ALANTHUS DATA COMMUNICATIONS CORP

Rockville, MD **ADV PG 32B**

DATA ACCESS SYSTEMS INC

Blackwood, NJ **ADV PG 123**

GENERAL ELECTRIC CO —

COMMUNICATION EQUIPMENT

LEASING AND SERVICE

Schenectady, NY **ADV PGS 152-153**

SIEMENS CORP

Iselin, NJ **ADV PGS 120-121**

SPECTRON, A DIV OF NORTHERN

TELECOM INC

Moorestown, NJ **ADV PG 79**

Alanthus Data Communications Corp

Rockville, MD

American Used Computer Co

Boston, MA

Anderson Jacobson

San Jose, CA

Boston Financial & Equity Corp

Boston, MA

C & L Terminals Inc

Portland, OR

Carterfone Communications Corp

Dallas, TX

Centronics Data Computer Corp

Hudson, NH

Chess

Denver, CO

CMC Marketing Corp

Houston, TX

ComData Corp

Skokie, IL

Computer Devices Inc

Burlington, MA

Computer Transceiver Systems Inc

Paramus, NJ

Continental Resources Inc

Bedford, MA

Data Access Systems Inc

Blackwood, NJ

Data Dimensions Inc

Norwalk, CT

Datagraphix Inc

San Diego, CA

Datametrics Corp

Van Nuys, CA

Dataproducts Corporation

Woodland Hills, CA

Data Rentals/Sales Inc

Culver City, CA

David Jamison Carlyle Corp

Los Angeles, CA

Digital Equipment Corp

Maynard, MA

Electronic Interface Assoc Inc

New York, NY

Electro Rent

Burbank, CA

E-Systems Inc.

ECI Div.

St. Petersburg, FL

General Electric Co/Communication

Equipment Leasing and Service

Schenectady, NY

General Optonics Corp

South Plainfield, NJ

Hawaiian Telephone Co

Honolulu, HI

Hewlett-Packard Co

Palo Alto, CA

IESI Inc

Seattle, WA

CD Johnson/Assoc Ltd
Ottawa, ON
Lantor Inc
Playa Del Rey, CA
Leasametric
Foster City, CA
Micon Industries
Oakland, CA
NCR Corp
Dayton, OH
Perkin-Elmer Terminals Div
Flanders, NJ
Printer Systems Corp
Gaithersburg, MD
Selecterm Inc
Wakefield, MA
Siemens Corp
Iselin, NJ
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Transnet Corp
Union, NJ
Tymnet Inc
Cupertino, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

TELESCRIBER

Interstate Electronics Corp
Anaheim, CA
Talos Systems Inc
Scottsdale, AZ
Telaugraph Corporation
Los Angeles, CA

TELETYPEWRITERS

ALANTHUS DATA COMMUNICATIONS CORP

Rockville, MD **ADV PG 32B**

DATA ACCESS SYSTEMS INC

Blackwood, NJ **ADV PG 123**

GENERAL ELECTRIC CO

DATA COMM PROD DEPT

Waynesboro, VA **ADV PG 125**

INNOVATIVE ELECTRONICS INC

Miami Lakes, FL **ADV PG 142**

MANNESMANN TALLY

Kent, WA **ADV PG 124**

NEC INFORMATION SYSTEMS INC

Lexington, MA **ADV PG 6**

SIEMENS CORP

Iselin, NJ **ADV PGS 120-121**

Alanthus Data Communications Corp

Rockville, MD

American Terminal Leasing Co

Boston, MA

American Used Computer Co

Boston, MA

Anderson Jacobson

San Jose, CA

Applied Systems Corp

St Claire Shores, MI

AT&T

Morris Plains, NJ

Boston Financial & Equity Corp

Boston, MA

Cal Datacom

Santa Ana, CA

Carterfone Communications Corp

Dallas, TX

Cincinnati Bell

Cincinnati, OH

ComData Corp

Skokie, IL

For local phone numbers of companies, turn to **Vendor Directory, page 301.**

Computer Automation; Naked Mini Div
Irvine, CA
Computer Devices Inc
Burlington, MA
Continental Resources Inc
Bedford, MA
Data Access Systems Inc
Blackwood, NJ
Data General Corporation
Westboro, MA
Data Rentals/Sales Inc
Culver City, CA
Dataroyal
Nashua, NH
David Jamison Carlyle Corp
Los Angeles, CA
Digital Equipment Corp
Maynard, MA
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
E-Systems Inc., ECI Div.
St. Petersburg, FL
Extel Corp.
Northbrook, IL
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
General Telephone Co of the Northwest
Everett, WA
General Telephone Co of Wisconsin
Sun Prairie, WI
Hawaiian Telephone Co
Honolulu, HI
Hendrix
Manchester, NH
Informer Inc
Los Angeles, CA
Innovative Electronics Inc
Miami Lakes, FL
ITT Business Sys & Comm Grp
New York, NY
Lantor Inc
Playa Del Rey, CA
Leasametric
Foster City, CA
Mannesmann Tally
Kent, WA
Micon Industries
Oakland, CA
Modular Computer Systems
Fort Lauderdale, FL
MTI Sales Corp
Great Neck, NY
NEC Information Systems Inc
Lexington, MA
New England Telephone & Telegraph Co
Boston, MA
Nuclear Engineering Services Co
Sunnyvale, CA
Olivetti Corp
Tarrytown, NY
Qantel Corporation
Hayward, CA
RCA Global Communications Inc
New York, NY
Sideral Corp
Portland, OR
Siemens Corp
Iselin, NJ
Southern New England Telephone Co
New Haven, CT
Sperry Univac, MCO
Irvine, CA
Teletype Corp
Skokie, IL
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT

Texas Instruments Digital Systems Group
Houston, TX
Trans-Lux Corp
Norwalk, CT
Transnet Corp
Union, NJ
Tymnet Inc
Cupertino, CA
Vardon & Associates
Irving, TX
The Western Union Telegraph Co
Upper Saddle River, NJ
Xerox Corp
El Segundo, CA

TERMINAL CONTROLLERS

COMPUTER COMMUNICATIONS INC
Torrance, CA **ADV PG 41**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
MEMOREX CORP
Cupertino, CA **ADV PG 32A**
PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA **ADV PG 45**
RACAL-MILGO
Miami, FL **ADV PGS 30-31**
Agile Corp
Sunnyvale, CA
Air Land Systems Corp
Fairfax, VA
Ampex Corp; Memory Products Div
El Segundo, CA
Ann Arbor Terminals
Ann Arbor, MI
Applied Systems Corp
St Claire Shores, MI
AT&T
Morris Plains, NJ
The Braegen Corp
Cupertino, CA
Bunker Ramo Corp/Info Sys Div
Trumbull, CT
Cambridge Telecommunications
Burlington, MA
Carterfone Communications Corp
Dallas, TX
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
Commtext Inc
Crofton, MD
Computer Communications Inc
Torrance, CA
Data General Corporation
Westboro, MA
Data Plus Inc
Lorton, VA
Data Stream Communications Inc
Mountain View, CA
David Jamison Carlyle Corp
Los Angeles, CA
Delta Data Systems
Cornwell Heights, PA
Digital Datacom Inc
Irvine, CA
Digital Equipment Corp
Maynard, MA
Epic Data Corp
Richmond, BC
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Gen/Comp Inc.
Canton, MA
General Automation
Anaheim, CA

General Telephone Co of the Northwest
Everett, WA
Goodwood Data Systems
Carleton Pl, ON
Harris Corp
Composition Systems Div
Melbourne, FL
Hawaiian Telephone Co
Honolulu, HI
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Hydri Control Systems Div
Houston, TX
Innovative Electronics Inc
Miami Lakes, FL
ITT Courier Terminal Systems Inc
Tempe, AZ
Leasametric
Foster City, CA
Lexicon Inc
Waltham, MA
MDS/Trivex
Costa Mesa, CA
Memorex Corp
Cupertino, CA
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
New Jersey Bell Telephone Co
Newark, NJ
Northern Telecom Systems Corp
Minneapolis, MN
Nu Data Corp
Little Silver, NJ
Printer Systems Corp
Gaithersburg, MD
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Racal-Milgo
Miami, FL
RCA Global Communications Inc
New York, NY
Sanders Associates Inc
Information Products Div
Nashua, NH
SCI Systems Inc
Huntsville, AL
Selanar Corp
Santa Clara, CA
Sideral Corp
Portland, OR
Signetics Corporation
Sunnyvale, CA
Southern New England Telephone Co
New Haven, CT
Standard Microsystems
Hauppauge, NY
Tektronix Inc
Beaverton, OR
Telex Computer Products Inc
Tulsa, OK
Trendata/Standard Memories
Santa Ana, CA

TERMINAL INTERFACES

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
Able Computer
Irvine, CA
Agile Corp
Sunnyvale, CA
Ampex Corp
Memory Products Div
El Segundo, CA
The Braegen Corp
Cupertino, CA

If you want to know what other products a company makes, turn to **Vendor Directory, page 301.**

Braegen Corp
Mini-Peripherals Div
Anaheim, CA
Chess
Denver, CO
Cincinnati Electronics Corp
Cincinnati, OH
Com/Tech Systems
New York, NY
Custom Terminals
Hauppauge, NY
Data General Corporation
Westboro, MA
David Jamison Carlyle Corp
Los Angeles, CA
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Gen/Comp Inc.
Canton, MA
General Telephone Co of the Northwest
Everett, WA
Harris Corp
Composition Systems Div
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Innovative Electronics Inc
Miami Lakes, FL
Interactive Systems/3M
Ann Arbor, MI
CD Johnson/Assoc Ltd
Ottawa, ON
Leasametric
Foster City, CA
Nu Data Corp
Little Silver, NJ
Paradyne Corp
Largo, FL
Phone 1 Inc
Rockford, IL
Southern New England Telephone Co
New Haven, CT
Tel-Tex Inc
Houston, TX
Trendata/Standard Memories
Santa Ana, CA
Triformation Systems Inc
Stuart, FL
Tymnet Inc
Cupertino, CA
United Data Services Co Inc
Phoenix, AZ
Versitron Inc
Washington, DC
Zitel Corp
San Jose, CA

VIDEO DATA TERMINALS (KSR)

ALANTHUS DATA COMMUNICATIONS CORP
Rockville, MD ADV PG 328
DATA ACCESS SYSTEMS INC
Blackwood, NJ ADV PG 123
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA ADV PG 81
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY ADV PGS 152-153
MANNESMANN TALLY
Kent, WA ADV PG 124
MEMOREX CORP
Cupertino, CA ADV PG 32A
RACAL-MILGO
Miami, FL ADV PGS 30-31
SIEMENS CORP
Iselin, NJ ADV PGS 120-121

SPECTRON, A DIV OF NORTHERN TELECOM INC
Moorestown, NJ ADV PG 79
TEC INC
Tucson, AZ ADV PG 126
Acro Corporation
Irvine, CA
Alanthus Data Communications Corp
Rockville, MD
American Terminal Leasing Co
Boston, MA
American Used Computer Co
Boston, MA
AM Jacquard Systems
Santa Monica, CA
Anderson Jacobson
San Jose, CA
Ann Arbor Terminals
Ann Arbor, MI
Applied Digital Data Systems Inc
Hauppauge, NY
Applied Systems Corp
St Claire Shores, MI
AT&T
Morris Plains, NJ
Beehive International
Salt Lake City, UT
Billings Computer Corporation
Provo, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
W A Brown Instruments
Orlando, FL
Bunker Ramo Corp/Info Sys Div
Trumbull, CT
C & L Terminals Inc
Portland, OR
Cado Systems Corp
Torrance, CA
Cal Datacom
Santa Ana, CA
Carterfone Communications Corp
Dallas, TX
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
C Itoh Electronics Inc
Los Angeles, CA
CMC Marketing Corp
Houston, TX
ComData Corp
Skokie, IL
Compression Labs Inc
Cupertino, CA
Computer Automation
Naked Mini Div
Irvine, CA
Continental Resources Inc
Bedford, MA
Control Data Corp
Minneapolis, MN
Data Access Systems Inc
Blackwood, NJ
Data Communications Corp
Memphis, TN
Data Dimensions Inc
Norwalk, CT
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
Datagraphix Inc/Display Dept
San Diego, CA
Datamedia Corp
Pennsauken, NJ
Datapoint Corporation
San Antonio, TX
Data Rentals/Sales Inc
Culver City, CA
Data Terminals & Communications
Campbell, CA

David Jamison Carlyle Corp
Los Angeles, CA
Delta Data Systems
Cornwell Heights, PA
Digilog Systems Inc
Micro Computer Div
Horsham, PA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digital Equipment Corp
Maynard, MA
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
Facit Inc
Greenwich, CT
First Computer Corp
Westmont, IL
Four-Phase Systems Inc
Cupertino, CA
GDS Inc
Seattle, WA
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
General Telephone Co of Wisconsin
Sun Prairie, WI
General Terminal Corp
Tustin, CA
GTE Comp-Acct
Anaheim, CA
GTE Telenet Communications Corp
Vienna, VA
Harris Corp
Data Communications Div
Dallas, TX
Hawaiian Telephone Co
Honolulu, HI
HazelTine Corp
Greenlawn, NY
Heath Co
Benton Harbor, MI
Hewlett-Packard Co
Palo Alto, CA
Honeywell Information Systems
Waltham, MA
Human Design Systems Inc
Philadelphia, PA
Infolink Data Communications
San Diego, CA
Informer Inc
Los Angeles, CA
Intelligent Systems Corp
Norcross, GA
Interlec Data Systems Corporation
Columbia, SC
ITT Courier Terminal Systems Inc
Tempe, AZ
CD Johnson/Assoc Ltd
Ottawa, ON
Lantor Inc
Playa Del Rey, CA
Lear Siegler Inc/Data Products Div
Anaheim, CA
Leasametric
Foster City, CA
Mannesmann Tally
Kent, WA
MDS/Trivex
Costa Mesa, CA
Memorex Corp
Cupertino, CA
Modular Computer Systems
Fort Lauderdale, FL
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH

New England Telephone & Telegraph Co
Boston, MA
New Jersey Bell Telephone Co
Newark, NJ
Olivetti Corp
Tarrytown, NY
Ontel Corp
Woodbury, NY
Perkin-Elmer Terminals Div
Flanders, NJ
Phone 1 Inc
Rockford, IL
Plantronics/Santa Cruz
Santa Cruz, CA
Plessey Peripheral Systems
Irvine, CA
Prime Computer Inc
Natick, MA
Qantel Corporation
Hayward, CA
Racal-Milgo
Miami, FL
Raytheon Data Systems; Mini-Computer Div
Mansfield, MA
RCA Global Communications Inc
New York, NY
Rental Electronics Inc
Palo Alto, CA
Selecterm Inc
Wakefield, MA
Sidercal Corp
Portland, OR
Siemens Corp
Iselin, NJ
Soroc Technology Inc
Anaheim, CA
Southern New England Telephone Co
New Haven, CT
Southern Pacific Distributed Message
Systems
McLean, VA
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Sperry Univac
Blue Bell, PA
Systems Research Inc
Okemos, MI
TEC Inc
Tucson, AZ
Tektronix Inc
Beaverton, OR
Teleray Div; Research Inc
Minneapolis, MN
Teletype Corp
Skokie, IL
Televideo Inc
San Jose, CA
Telex Computer Products Inc
Tulsa, OK
Tel-Tex Inc
Houston, TX
Terminal Data Corp
Rockville, MD
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Transnet Corp
Union, NJ
Trendata/Standard Memories
Santa Ana, CA
Tymnet Inc
Cupertino, CA
Vardon & Associates
Irving, TX
Vector Graphic Inc
Westlake Village, CA
Wang Laboratories Inc
Lowell, MA
The Western Union Telegraph Co
Upper Saddle River, NJ

Zitel Corp
San Jose, CA

VIDEO DATA TERMINALS (RO)

DATA ACCESS SYSTEMS INC
Blackwood, NJ **ADV PG 123**
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY **ADV PGS 152-153**
MANNESMANN TALLY
Kent, WA **ADV PG 124**
MDS/TRIVEX
Costa Mesa, CA **ADV PG 122**
MEMOREX CORP
Cupertino, CA **ADV PG 32A**
RACAL-MILGO
Miami, FL **ADV PGS 30-31**
SIEMENS CORP
Iselin, NJ **ADV PGS 120-121**
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ **ADV PG 79**
TEC INC
Tucson, AZ **ADV PG 126**
American Used Computer Co
Boston, MA
Ann Arbor Terminals
Ann Arbor, MI
Applied Digital Data Systems Inc
Hauppauge, NY
Beehive International
Salt Lake City, UT
Boston Financial & Equity Corp
Boston, MA
The Braegen Corp
Cupertino, CA
W A Brown Instruments
Orlando, FL
C & L Terminals Inc
Portland, OR
Cal Datacom
Santa Ana, CA
Carterfone Communications Corp
Dallas, TX
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
CMC Marketing Corp
Houston, TX
Data Access Systems Inc
Blackwood, NJ
Data Dimensions Inc
Norwalk, CT
Data General Corporation
Westboro, MA
Datamedia Corp
Pennsauken, NJ
Datapoint Corporation
San Antonio, TX
David Jamison Carlyle Corp
Los Angeles, CA
Digilog Systems Inc
Micro Computer Div
Horsham, PA
Digital Equipment Corp
Maynard, MA
Electronic Interface Assoc Inc
New York, NY
Electro Rent
Burbank, CA
GDS Inc
Seattle, WA
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
General Telephone Co of Wisconsin
Sun Prairie, WI

General Terminal Corp
Tustin, CA
Harris Corp
Composition Systems Div
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Informer Inc
Los Angeles, CA
CD Johnson/Assoc Ltd
Ottawa, ON
Lantor Inc
Playa Del Rey, CA
Lear Siegler Inc/Data Products Div
Anaheim, CA
Leasametric
Foster City, CA
Lexicon Inc
Waltham, MA
Mannesmann Tally
Kent, WA
MDS/Trivex
Costa Mesa, CA
Memorex Corp
Cupertino, CA
MTI Sales Corp
Great Neck, NY
NCR Corp
Dayton, OH
Ontel Corp
Woodbury, NY
Perkin-Elmer Terminals Div
Flanders, NJ
Plessey Peripheral Systems
Irvine, CA
Prime Computer Inc
Natick, MA
Qantel Corporation
Hayward, CA
Racal-Milgo
Miami, FL
RCA Global Communications Inc
New York, NY
Rental Electronics Inc
Palo Alto, CA
Sidercal Corp
Portland, OR
Siemens Corp
Iselin, NJ
Soroc Technology Inc
Anaheim, CA
Southern New England Telephone Co
New Haven, CT
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
TEC Inc
Tucson, AZ
Teleray Div
Research Inc
Minneapolis, MN
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Texas Instruments Digital Systems Group
Houston, TX
Trans-Lux Corp
Norwalk, CT
Transnet Corp
Union, NJ
Tymnet Inc
Cupertino, CA
Wang Laboratories Inc
Lowell, MA

WORD RECOGNITION UNITS

DIGITAL PATHWAYS INC.
Mountain View, CA **ADV PG 147**
Centigram Corp
Sunnyvale, CA
Communications Interface Inc
Minneapolis, MN

Dataroyal
Nashua, NH
Delta Data Systems
Cornwell Heights, PA
Dest Data Corp
San Jose, CA
Digital Pathways Inc.
Mountain View, CA
Lexitron Corp
Chatsworth, CA
MFE Corp
Salem, NH
NEC America Inc
New York, NY
Verbox Corp
Bedford, MA
Wang Laboratories Inc
Lowell, MA

WORD PROCESSORS, COMMUNICATING

BOLT BERANEK & NEWMAN
INFORMATION MANAGEMENT CORP
Cambridge, MA **ADV PGS 18-19**
GENERAL ELECTRIC CO
DATA COMM PROD DEPT
Waynesboro, VA **ADV PG 125**
MOHAWK DATA SCIENCES CORP
Parsippany, NJ **ADV PG 122**
Agile Corp
Sunnyvale, CA
AM Jacquard Systems
Santa Monica, CA
Anderson Jacobson
San Jose, CA
Artelonics Corp
Santa Clara, CA
Billings Computer Corporation
Provo, UT
Bolt Beranek & Newman Information
Management Corp
Cambridge, MA
W A Brown Instruments
Orlando, FL

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catalog information and new
product announcements.
Turn to **UpDate Service Card,**
page 201.

C & L Terminals Inc
Portland, OR
Cado Systems Corp
Torrance, CA
Centronics Data Computer Corp
Hudson, NH
CMC Marketing Corp
Houston, TX
Columbia Data Products
Columbia, MD
Communications Interface Inc
Minneapolis, MN
Computer Devices Inc
Burlington, MA
CPT Corp
Eden Prairie, MN
Crown Communications Inc
Dallas, TX
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
Datapoint Corporation
San Antonio, TX
Dataproducts Corporation
Woodland Hills, CA
Dataroyal
Nashua, NH
Data Terminals & Communications
Campbell, CA
Delta Data Systems
Cornwell Heights, PA
Digilog Systems Inc
Micro Computer Div
Horsham, PA
Digital Equipment Corp
Maynard, MA
ECS Microsystems
San Jose, CA
Four-Phase Systems Inc
Cupertino, CA
General Electric Co
Data Comm Prod Dept
Waynesboro, VA
GNAT Computers, Inc.
San Diego, CA
Harris Corp
Composition Systems Div
Melbourne, FL
Heath Co
Benton Harbor, MI
Heuristics Inc
Sunnyvale, CA
Hewlett-Packard Co
Palo Alto, CA

IBM Office Products Div.
Franklin Lakes, NJ
Interactive Systems Corp
Santa Monica, CA
Lantor Inc
Playa Del Rey, CA
Leasametric
Foster City, CA
Lexitron Corp
Chatsworth, CA
Megadata Corp
Bohemia, NY
Micon Industries
Oakland, CA
Mohawk Data Sciences Corp
Parsippany, NJ
NBI Inc
Boulder, CO
Nixdorf Computer Corp
Burlington, MA
Olivetti Corp
Tarrytown, NY
Ontel Corp
Woodbury, NY
Plessey Peripheral Systems
Irvine, CA
Raytheon Data Systems/Terminal Div
Norwood, MA
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
Selecterm Inc
Wakefield, MA
Sidereal Corp
Portland, OR
Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Terminal Specialties Inc
Salt Lake City, UT
Triformation Systems Inc
Stuart, FL
Vardon & Associates
Irving, TX
Vector Graphic Inc
Westlake Village, CA
Vydec Inc
Florham Park, NJ
Wang Laboratories Inc
Lowell, MA
Xerox Corp
Office Products Div
Dallas, TX
Xerox Corporation
Stanford, CT

SIEMENS

**Whatever your data communications need,
Siemens has the terminal to meet it...
reliably, continuously, quietly.**

Siemens terminals are versatile, smart, and silent. A wide variety of standard features and options enable them to handle your present and future requirements. They are ideal for...data applications such as Time Sharing, Data Base Access and Specialized Services...Point-to-Point, Private Wire and Polled Network Data Communications... Common Carrier services such as TELEX, TWX and DDD.

With Siemens terminals, operation is easier and efficiency is greater—thanks to a host of operator conveniences and advanced features. Add-on options include a Mini-Diskette for line speeds up to 2400 baud asynchronous, with an edit-store memory of 200,000 characters. Basic design allows easy addition of technological advancements. Modular construction assures simplified maintenance—replacement parts can be plugged in on the spot.

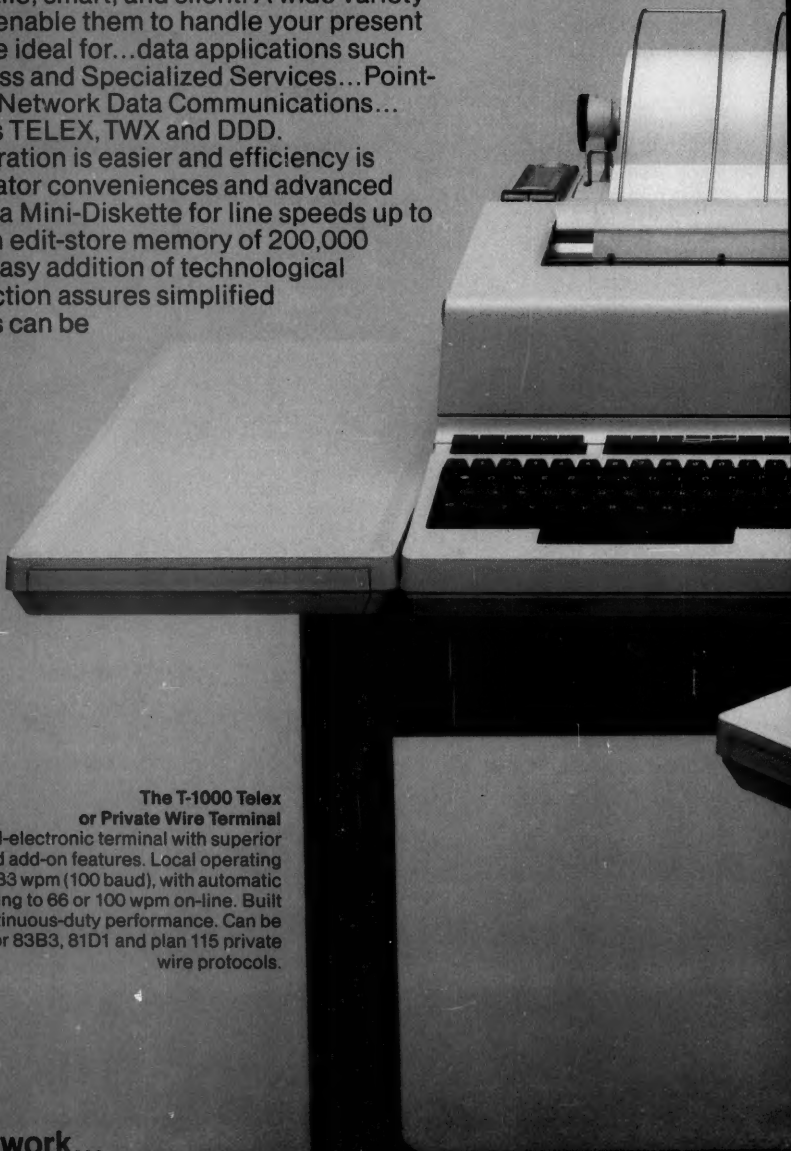
For further information
contact Mr. P. Bartuska:

Siemens Corporation
Data Communications Division
186 Wood Avenue South
Iselin, New Jersey 08830
(201) 494-1000

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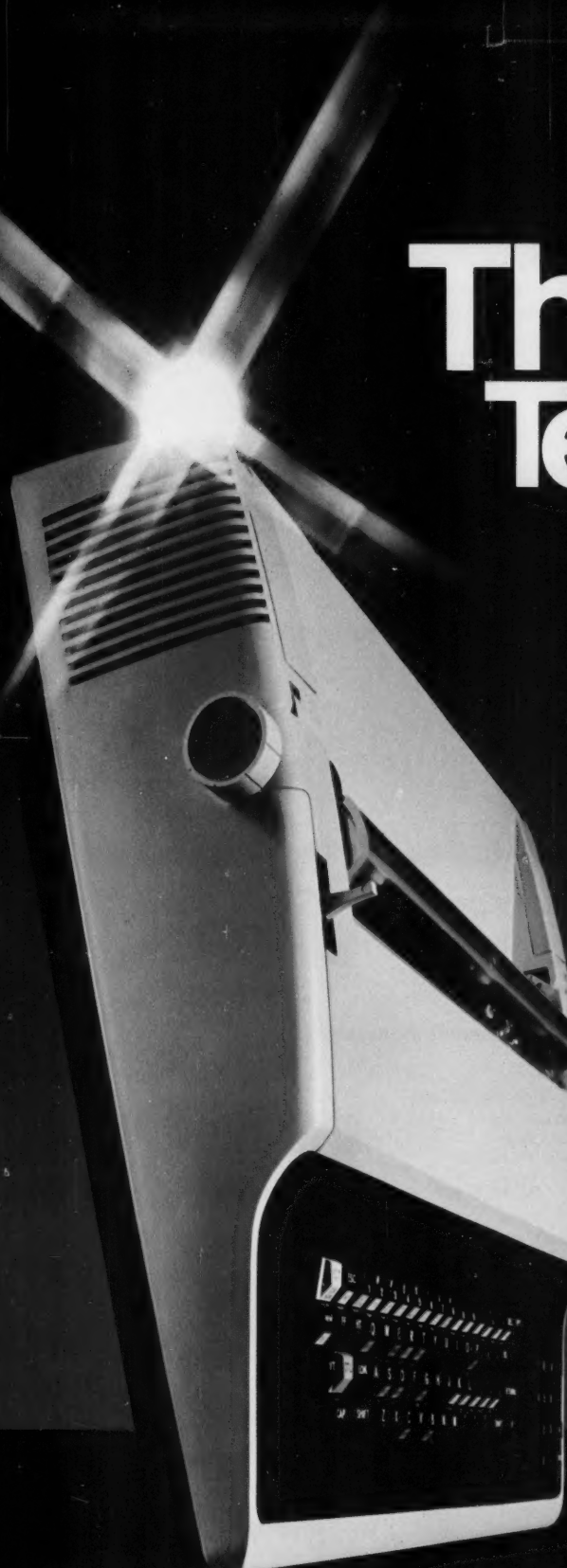
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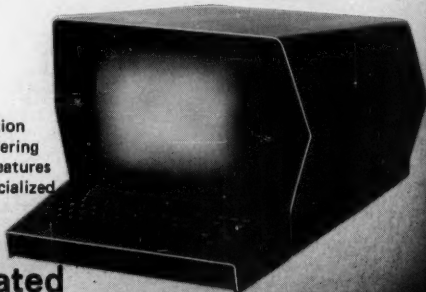


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Software

Software growth affects all areas of data communications. In the last year, a number of proposals for distributed database-management systems have come to light, which shows the growing impact of novel software designs on the field of information transfer. In other communications areas, software is replacing some hardware functions, taking over network control, and helping to bring about electronic mail and the integrated office.

Today software is the most expensive component in many data communications networks. This is because efficient software requires the services of personnel whose functions are not yet fully automated and whose services are becoming a scarce and costly commodity. Also, software often must be changed whenever the network's physical configuration is altered even slightly. The result is that a programming staff is often busy maintaining current programs instead of developing new software that might expand the scope of a business's data communications facilities.

With the rising cost of customized software, several vendors listed in the *Buyers' Guide* have devoted themselves to the production of long lists of programs that will fit most data communications situations with a minimum of costly, time-consuming customization.

Of special note are packages to aid the user in network design. The process of designing, implementing, and controlling data communications networks is rapidly exceeding manual capabilities. Network managers and designers are looking more to computer resources to manage the volume of traffic information, develop and evaluate network configurations, and even assist in allocating and placing control functions among the network processors.

The number of network alternatives is growing so fast that the demand for optimization—both in private network design and in the interface to, and use of, public network facilities—can be satisfied only through computer aids. These aids range from simple scratch-pad memory systems that store and compile network

statistics to complex traffic simulators, design configurators, and software for data-distribution modeling. Purchase prices vary from \$4,000 to \$50,000.

Picking the appropriate design package

How does one select from among these packages? The user should pinpoint the primary objectives of his network analysis/design and prepare a list of desired package features, including (1) system capabilities such as inputs and outputs and (2) characteristics such as ease of use, price, and applicability to a particular design problem. There may not be a single product that can satisfy all the criteria, and some characteristics, such as ease of use, may require subjective rather than objective evaluation.

Effective network-design aids take into account several problem areas:

- Complexity of the design process. The proliferation of advanced hardware, software, control features, and facilities offers many design choices. Networks have evolved from simple multiple-terminal, single-CPU configurations to large multi-application systems with distributed data processors and sophisticated message structures and routing strategies.
- Seat-of-the-pants design techniques. Traditional design methods based on rules of thumb and past experience can no longer handle either the complexities or the volume of information necessary to effectively plan today's networks.
- Overdesign of networks. When planners/designers lack the expertise required, they tend to overdesign the network in regard to users' needs. Often they evaluate very few alternatives, and each with only a cursory cost-benefit analysis.
- User interface. Users frequently make unreasonable demands on the network and seldom have a feel for the cost-performance relationships. Little is ever done to educate users in this regard.

Most computer-aided network-design tools consist of libraries of modules that perform different—and specialized—subordinate operations. Several representative capabilities are generating and analyzing traffic patterns; compiling tariff information, providing node locations, plotting and graphically displaying outputs, designing the network topology, partitioning the network, evaluating overall network requirements, simulating traffic load, and maintaining a database of network statistics and directory information.

Changing parameters

A network-design product, in general, should plot a set of performance data for an existing or proposed network. It can generate, and regenerate, these performance curves in response to changes in critical design parameters, such as protocols, line capacity, concentration points, host processor capability, and message-routing techniques. Since the network planner must determine cost-performance trade-offs for a fixed set of design parameters, he needs the network-design package to evaluate these trade-offs in light of expected network functions.

Yet, even such an interdependence will not guaran-

Network-design-system checklist

Before selecting a software design package, network planners should consider these factors.

- Ease of use and amount of staff training required
 - Interactive or batch mode
 - Design models supported
 - Readability of output reports
 - Vendor consulting support
 - Sensitivity analysis
 - Ease of update for network changes
 - Modifications to support customer requirements
 - Ease of network parameter specification
 - If installation is on in-house computer:
 - CPU and disk storage requirements
 - Source language
 - Operating system required
 - Protocols supported
-

tee optimum solutions for every design problem. Many areas in the design process do not lend themselves to automation, so the designer will frequently introduce his own judgment (and possible biases) into the design procedure, assisted by the software.

Several state-of-the-art network-design products are available either as general offerings or as proprietary packages that use and evaluate a particular vendor's facilities. To help network managers choose among the offerings, the accompanying network-design-system checklist presents important product criteria. ■

For more on software, see the following DATA COMMUNICATIONS articles.

1. "Distributed DBMS no longer just a concept," James B. Rothnie, Jr., January 1980, p. 61. The distributed database-management system is coming. A prototype system described in this article addresses the problems of integration and contention.
2. "Aspects of database design in a distributed network," Mary E. S. Loomis, May 1980, p. 83. Applying an extensive knowledge of several information systems, this author illustrates approaches to creating a successful data-communications-oriented database for a distributed processing network.
3. "Software packages for solving network puzzles," B. R. Konsynski and W. E. Bracker, July 1980, p. 69. How do you choose a computer aid for troubleshooting or designing a network? The authors discuss many available software packages and how to select one.
4. "Requirements for a computer-aided net-design package," B. R. Konsynski and W. E. Bracker, August 1980, p. 75. An easy-to-use definition language facilitates user interface to network-design systems and permits groups of network planners to work independently on design and modeling.
5. "Finesse versus force in bolstering micros' capabilities," John Wharton and Lionel Smith, August 1980, p. 93. In some cases, optimized software—not an extra peripheral chip—can give a microprocessor all the power it needs.

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Source-Of-The-South (SOS)

Montgomery, AL

Southern New England Telephone Co

New Haven, CT

Tek-Com

San Jose, CA

Timeplex Inc

Rochelle Park, NJ

Universal Data Systems Inc

Huntsville, AL

Wang Laboratories Inc

Lowell, MA

The Western Union Telegraph Co

Upper Saddle River, NJ

**CABLES, ELECTRICAL
PREFABRICATED EXTENDING****AVANTI COMMUNICATIONS CORP**Newport, RI **ADV PG 62****BIZCOMP CORPORATION**Menlo Park, CA **ADV PG 69****CODEx CORPORATION**Mansfield, MA **ADV PGS 5,34-35****COMPRE COMM INC**Champaign, IL **ADV PG 44****DATA ACCESS SYSTEMS INC**Blackwood, NJ **ADV PG 123****EXPANDOR INC**Pittsburgh, PA **ADV PG 144****MEMOREX CORP**Cupertino, CA **ADV PG 32A****RCA SERVICE CO****DATA SERVICES**Cherry Hill, NJ **ADV PG 154****SPECTRON, A DIV OF NORTHERN****TELECOM INC**Moorestown, NJ **ADV PG 79**

A D C Magnetics Controls Co

Bloomington, MN

American Used Computer Co

Boston, MA

Avanti Communications Corp

Newport, RI

Belden Corp

Geneva, IL

Bizcomp Corporation

Menlo Park, CA

Boston Financial & Equity Corp

Boston, MA

Codex Corporation

Mansfield, MA

Compre Comm Inc

Champaign, IL

For further catalog information, turn to
Update Service Card, page 201.

Computer Power Systems Corp
Carson, CA

Continental Resources Inc
Bedford, MA

Craig Data Cable
Westport, CT

Data Access Systems Inc
Blackwood, NJ

Data Set Cable Co Inc
Ridgefield, CT

Develcon Electronics Inc
Doylestown, PA

Electrodata Inc
Bedford Heights, OH

Electronic Interface Assoc Inc
New York, NY

ENA Datasystems Inc
Rexdale, ON

Expandor Inc
Pittsburgh, PA

Gen/Comp Inc
Canton, MA

General Automation
Anaheim, CA

General Cable Company
A Div of GK Technologies Inc
Greenwich, CT

Giltronix Inc
Palo Alto, CA

Harbor Electronics
Ridgefield, CT

Inmac
Santa Clara, CA

Interactive Systems/3M
Ann Arbor, MI

International Data Sciences Inc
Lincoln, RI

Livermore Data Systems Inc
Livermore, CA

Lynn Electronics Corp
Feasterville, PA

Memorex Corp
Cupertino, CA

Modtech Inc
Livermore, CA

National Electric Cable
Portland, OR

Omnitex Data
Phoenix, AZ

Precision Communications Services Inc
Tampa, FL

RCA Service Co
Data Services
Cherry Hill, NJ

Selecterm Inc
Wakefield, MA

Spectron, a Div of Northern Telecom Inc
Moorestown, NJ

Support Systems International
Richmond, CA

Systar Corporation
San Jose, CA

Tek-Com
San Jose, CA

Terminal Data Corp
Rockville, MD

Terminal Specialties Inc
Salt Lake City, UT

Times Wire & Cable
Div of Times Fiber Communications Inc
Wallingford, CT

Trompeter Electronics Inc
Chatsworth, CA

United Data Services Co Inc
Phoenix, AZ

Vertex Electronics Inc
Farmingdale, NY

CABLES, LIGHTWAVE (OPTICAL FIBER)

Belden Corp
Geneva, IL

Canoga Data Systems
Canoga Park, CA

Electrodata Inc
Bedford Heights, OH

Galileo Electro-Optics Corp
Sturbridge, MA

General Cable Company
A Div of GK Technologies Inc
Greenwich, CT

General Telephone Co of the Northwest
Everett, WA

Hewlett-Packard Co
Palo Alto, CA

ITT-Electro/Optical
Roanoke, VA

National Electric Cable
Portland, OR

Siecor Optical Cables
Hickory, NC

Times Wire & Cable
Div of Times Fiber Communications Inc
Wallingford, CT

Valtec Corp
West Boylston, MA

CODE CONVERTERS

EXPANDOR INC
Pittsburgh, PA ADV PG 144

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 142

RACAL-TELESYSTEMS INC
Chicago, IL ADV PG 71

Applied Systems Corp
St Claire Shores, MI

W A Brown Instruments
Orlando, FL

Cambridge Telecommunications
Burlington, MA

Carterfone Communications Corp
Dallas, TX

Columbia Data Products
Columbia, MD

Com/Tech Systems
New York, NY

CSS Telecommunications
Mountain View, CA

Custom Terminals
Hauppauge, NY

Data Stream Communications Inc
Mountain View, CA

DEI-Teleproducts
Escondido, CA

Digicom Data Products Inc
San Jose, CA

Edge Technology
Portland, OR

Electronic Interface Assoc Inc
New York, NY

Expandor Inc
Pittsburgh, PA

Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA

Frederick Electronics Corp
Frederick, MD

General Telephone Co of the Northwest
Everett, WA

Innovative Electronics Inc
Miami Lakes, FL

Leasametric
Foster City, CA

Nu Data Corp
Little Silver, NJ

QEI Inc
Springfield, NJ

Racal-Telesystems Inc
Chicago, IL

Sherwood Digital Electronics Corp
Salt Lake City, UT

Silicon Systems Inc
Tustin, CA

Teleprocessing Products Inc
Simi Valley, CA

Tele-Signal Corp
Hauppauge, NY

Terminal Data Corp
Rockville, MD

Triformation Systems Inc
Stuart, FL

Triton Engineering Inc
Gaithersburg, MD

Vardon & Associates
Irving, TX

Via West
Phoenix, AZ

COMPUTER/COMMUNICATIONS INTERFACES

ARK ELECTRONIC PRODUCTS
Melbourne, FL ADV PG 68

AVANTI COMMUNICATIONS CORP
Newport, RI ADV PG 62

BIZCOMP CORPORATION
Menlo Park, CA ADV PG 69

COMDESIGN INC
Goleta, CA ADV PG 42

COMPRE COMM INC
Champaign, IL ADV PG 44

EXPANDOR INC
Pittsburgh, PA ADV PG 144

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL ADV PG 142

INTERTEL INC
Andover, MA ADV PG 87

MEMOREX CORP
Cupertino, CA ADV PG 32A

RACAL-TELESYSTEMS INC
Chicago, IL ADV PG 71

RCA SERVICE CO
DATA SERVICES
Cherry Hill, NJ ADV PG 154

TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA ADV PG Cover II

Able Computer
Irvine, CA

Advanced Electronics Design Inc
Sunnyvale, CA

Agile Corp
Sunnyvale, CA

Air Land Systems Corp
Fairfax, VA

American Microsystems Inc
Santa Clara, CA

American Satellite Company
Germantown, MD

AM Jacquard Systems
Santa Monica, CA

Applied Data Communications
Tustin, CA

Applied Systems Corp
St Claire Shores, MI

ARK Electronic Products
Melbourne, FL

Associated Computer Consultants
Santa Barbara, CA

Austron Data Systems Inc
Austin, TX

Avanti Communications Corp
Newport, RI

Bizcomp Corporation
Menlo Park, CA

BMS Data Handling Inc
Riverside, CA

Cado Systems Corp
Torrance, CA
Cambridge Telecommunications
Burlington, MA
Canoga Data Systems
Canoga Park, CA
Cincinnati Electronics Corp
Cincinnati, OH
Cincinnati Bell
Cincinnati, OH
Com-Design Inc
Goleta, CA
Commtext Inc
Crofton, MD
Communications Interface Inc
Minneapolis, MN
Compre Comm Inc
Champaign, IL
Computer Automation
Naked Mini Div
Irvine, CA
Computrol Corp
Ridgefield, CT
Comtal Corp
Pasadena, CA
Continental Resources Inc
Bedford, MA
Craig Data Cable
Westport, CT
Custom Terminals
Hauppauge, NY
Data General Corporation
Westboro, MA
Data Plus Inc
Lorton, VA
Datapoint Corporation
San Antonio, TX
Delta Data Systems
Cornwell Heights, PA
Digital Associates Corp
Stamford, CT
Digital Datacom Inc
Irvine, CA
Digital Equipment Corp
Maynard, MA
DPF Inc
Hartsdale, NY
Electronic Interface Assoc Inc
New York, NY
Expandor Inc
Pittsburgh, PA
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
Gen/Comp Inc.
Canton, MA
General Automation
Anaheim, CA
General Telephone Co of the Northwest
Everett, WA
Giltronic Inc
Palo Alto, CA
GNAT Computers, Inc.
San Diego, CA
Harbor Electronics
Ridgefield, CT
Hetra Computer & Communications
Industries Inc
Melbourne, FL
Hewlett-Packard Co
Palo Alto, CA
Industrial Computer Controls Inc
Cambridge, MA
Immac
Santa Clara, CA
Innovative Electronics Inc
Miami Lakes, FL

Interactive Systems/3M
Ann Arbor, MI
Interface Systems Inc
Ann Arbor, MI
Intertel Inc
Andover, MA
Leasametric
Foster City, CA
Macrolink
Anaheim, CA
MDB Systems Inc
Orange, CA
Memorex Corp
Cupertino, CA
Modular Computer Systems
Fort Lauderdale, FL
MSI Data Corp
Costa Mesa, CA
Muirhead Inc
Mountainside, NJ
National Electric Cable
Portland, OR
Network Systems Corp
Brooklyn Pk, MN
Nu Data Corp
Little Silver, NJ
Pacific Cyber/Metrix Inc
Dublin, CA
Periphonics Corp
Bohemia, NY
Phone 1 Inc
Rockford, IL
Plessey Peripheral Systems
Irvine, CA
Point-4 Data Corp
Irvine, CA
Prime Computer Inc
Natick, MA
Quad Systems Inc
Gaithersburg, MD
Racal-Telesystems Inc
Chicago, IL
Radian Corp-Unitech Products
Austin, TX
RCA Global Communications Inc
New York, NY
RCA Service Co
Data Services
Cherry Hill, NJ
Sherwood Digital Electronics Corp
Salt Lake City, UT
Software Results Corp
Columbus, OH
Southern New England Telephone Co
New Haven, CT
Sperry Univac, MCO
Irvine, CA
Standard Microsystems
Hauppauge, NY
Support Systems International
Richmond, CA
Tek-Com
San Jose, CA
Telecommunications Techniques Corp
Gaithersburg, MD
Terminal Data Corp
Rockville, MD
Trans-Lux Corp
Norwalk, CT
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Triformation Systems Inc
Stuart, FL
Triton Engineering Inc
Gaithersburg, MD
The TRW-Fujitsu Co
Los Angeles, CA
Ungermann-Bass
Santa Clara, CA
United Data Services Co Inc
Phoenix, AZ

Vardon & Associates
Irving, TX
Vertex Electronics Inc
Farmingdale, NY
Via West
Phoenix, AZ
Wang Laboratories Inc
Lowell, MA
The Western Union Telegraph Co
Upper Saddle River, NJ
Zitel Corp
San Jose, CA

DATA ACCESS ARRANGEMENT DEVICES

ASTROCOM CORP
St Paul, MN ADV PGS 66,86
BIZCOMP CORPORATION
Menlo Park, CA ADV PG 69
CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
DATA ACCESS SYSTEMS INC
Blackwood, NJ ADV PG 123
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA ADV PG 81
GENERAL DATACOMM IND INC
Danbury, CT ADV PG 63
GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY ADV PGS 152-153
INTERTEL INC
Andover, MA ADV PG 87
MULTI-TECH SYSTEMS INC
New Brighton, MN ADV PGS 58-59
PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA ADV PG 45
RACAL-VADIC INC
Sunnyvale, CA ADV PGS 60-61
UNIVERSAL DATA SYSTEMS INC
Huntsville, AL ADV PG Cover IV
American Used Computer Co
Boston, MA
Astrocom Corp
St Paul, MN
Bizcomp Corporation
Menlo Park, CA
Boston Financial & Equity Corp
Boston, MA
Carterfone Communications Corp
Dallas, TX
Chess
Denver, CO
Codex Corporation
Mansfield, MA
ComData Corp
Skokie, IL
Computer Transceiver Systems Inc
Paramus, NJ
Comtec Information Systems Inc
Cumberland, RI
Data Access Systems Inc
Blackwood, NJ
Data Dimensions Inc
Norwalk, CT
Data Rentals/Sales Inc
Culver City, CA
David Jamison Carlyle Corp
Los Angeles, CA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Electronic Interface Assoc Inc
New York, NY
Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA
General Datacomm Ind Inc
Danbury, CT

If you want to know what other products a company makes, turn to **Vendor Directory, page 301.**

General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY

General Telephone Co of Kentucky
Lexington, KY

General Telephone Co of the Northwest
Everett, WA

General Telephone Co of Wisconsin
Sun Prairie, WI

Harris-Darconz
Albuquerque, NM

Hawaiian Telephone Co
Honolulu, HI

Infolink Data Communications
San Diego, CA

Intertel Inc
Andover, MA

Modtech Inc
Livermore, CA

MSI Data Corp
Costa Mesa, CA

Multi-Tech Systems Inc
New Brighton, MN

NCR Corp
Dayton, OH

Omnitec Data
Phoenix, AZ

Panafax Corp
Woodbury, NY

Paradyne Corp
Largo, FL

Penril Corp
Data Communications Div
Rockville, MD

Precision Communications Services Inc
Tampa, FL

Pulsecom Div/Harvey Hubbell
Falls Church, VA

Racal-Vadic Inc
Sunnyvale, CA

Support Systems International
Richmond, CA

Tek-Com
San Jose, CA

Terminal Specialties Inc
Salt Lake City, UT

Universal Data Systems Inc
Huntsville, AL

Vardon & Associates
Irving, TX

The Western Union Telegraph Co
Upper Saddle River, NJ

DATA COMPRESSION DEVICES

INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**

Anderson Jacobson
San Jose, CA

Applied Systems Corp
St Claire Shores, MI

Compression Labs Inc
Cupertino, CA

Electronic Interface Assoc Inc
New York, NY

Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA

General Telephone Co of the Northwest
Everett, WA

Innovative Electronics Inc
Miami Lakes, FL

Linkabit Corporation
San Diego, CA

Quad Systems Inc
Gaithersburg, MD

DATA JACKS AND PLUGS

DYNATECH DATA SYSTEMS
Springfield, VA **ADV PG 84**

EXPANDOR INC
Pittsburgh, PA **ADV PG 144**

**SPECTRON, A DIV OF NORTHERN
TELECOM INC**
Moorestown, NJ **ADV PG 79**

A D C Magnetics Controls Co
Bloomington, MN

AT&T
Morris Plains, NJ

Cincinnati Bell
Cincinnati, OH

Craig Data Cable
Westport, CT

Dynatech Data Systems
Springfield, VA

Electronic Interface Assoc Inc
New York, NY

Expander Inc
Pittsburgh, PA

General Telephone Co of Kentucky
Lexington, KY

General Telephone Co of the Northwest
Everett, WA

Hawaiian Telephone Co
Honolulu, HI

Inmac
Santa Clara, CA

International Data Sciences Inc
Lincoln, RI

Lynn Electronics Corp
Feasterville, PA

Modtech Inc
Livermore, CA

National Electric Cable
Portland, OR

New Jersey Bell Telephone Co
Newark, NJ

Precision Communications Services Inc
Tampa, FL

Southern New England Telephone Co
New Haven, CT

Spectron, a Div of Northern Telecom Inc
Moorestown, NJ

Support Systems International
Richmond, CA

T-Bar Inc
Wilton, CT

Telecommunications Techniques Corp
Gaithersburg, MD

Termiflex Corp
Nashua, NH

Trompeter Electronics Inc
Chatsworth, CA

DATA SECURITY DEVICES, ENCODER/DECODERS

CODEX CORPORATION
Mansfield, MA **ADV PGS 5,34-35**

RACAL-MILGO
Miami, FL **ADV PGS 30-31**

SIEMENS CORP
Iselin, NJ **ADV PGS 120-121**

American Microsystems Inc
Santa Clara, CA

American Satellite Company
Germantown, MD

Applied Systems Corp
St Claire Shores, MI

W A Brown Instruments
Orlando, FL

Cincinnati Electronics Corp
Cincinnati, OH

Codex Corporation
Mansfield, MA

Com/Tech Systems
New York, NY

Computer Transceiver Systems Inc
Paramus, NJ

Custom Terminals
Hauppauge, NY

Dataproducts New England
Wallingford, CT

Datotek Inc
Dallas, TX

Electronic Interface Assoc Inc
New York, NY

Fairchild Space & Electronics Company
Germantown, MD

Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA

Hellman Associates
Palo Alto, CA

Motorola Gov't Electronics Div
Scottsdale, AZ

Pyrotronics
Cedar Knolls, NJ

Racal-Milgo
Miami, FL

Saber Laboratories Inc
San Francisco, CA

Sangamo Weston Data System Div
Sarasota, FL

Siemens Corp
Iselin, NJ

Tele-Signal Corp
Hauppauge, NY

Triton Engineering Inc
Gaithersburg, MD

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

DATA SECURITY DEVICES, PERSONAL IDENTIFICATION SYSTEMS

Cardkey Systems
Chatsworth, CA

Control Laser Corp
Orlando, FL

Ford Aerospace and Communications Corp
Western Development Lab Div
Palo Alto, CA

General Automation
Anaheim, CA

GTE Telenet Communications Corp
Vienna, VA

Identification Systems Inc
Acton, MA

Master Specialties Co
Costa Mesa, CA

Pyrotronics
Cedar Knolls, NJ

Rusco Electronic Systems
Glendale, CA

Schlage Electronics
Sunnyvale, CA

DATA SECURITY DEVICES, SOFTWARE SECURITY MODULES

Boole & Babbage Inc
Sunnyvale, CA

Cincinnati Electronics Corp
Cincinnati, OH

Gamma Technology Inc
Palo Alto, CA

Inmac
Santa Clara, CA

Interactive Systems/3M
Ann Arbor, MI

MSP Inc
Lexington, MA
On-Line Software Int'l
River Edge, NJ
Wang Laboratories Inc
Lowell, MA

FIRE DETECTION/PROTECTION EQUIPMENT

The Ansul Co/Wormald Intl Grp
Marinette, WI
Autocall Div/Federal Signal Corp
Shelby, OH
Computing Devices Div
Control Data Corp
Ottawa, ON
S H Couch Co
Tecumseh, MI
Faraday Inc
Tecumseh, MI
Fenwal Inc
Ashland, MA
Fire-Lite Alarms Inc
New Haven, CT
Grinnell Fire Protection Systems Co
Providence, RI
Harris-Darconz
Albuquerque, NM
Inmac
Santa Clara, CA
Kidde Belleville/Div of Kidde Inc
Belleville, NJ
Notifier Co
Lincoln, NE
Pyrotronics
Cedar Knolls, NJ
Standard Electric Time Corp
Springfield, MA

ERROR CONTROLLERS

ARK ELECTRONIC PRODUCTS

Melbourne, FL **ADV PG 68**

INNOVATIVE ELECTRONICS INC

Miami Lakes, FL **ADV PG 142**

MICOM SYSTEMS INC

Chatsworth, CA **ADV PGS**
Cover III, 37, 67

TIMEPLEX INC

Rochelle Park, NJ **ADV PG 40**

ARK Electronic Products

Melbourne, FL
Custom Terminals
Hauppauge, NY
Electronic Interface Assoc Inc
New York, NY
Frederick Electronics Corp
Frederick, MD
General Telephone Co of the Northwest
Everett, WA
Hewlett-Packard Co
Palo Alto, CA
Innovative Electronics Inc
Miami Lakes, FL
International Data Sciences Inc
Lincoln, RI
Micom Systems Inc
Chatsworth, CA
Robins Industries Corp
Commack, NY
Timeplex Inc
Rochelle Park, NJ

FURNITURE, CABINETS, TERMINAL ENCLOSURES

DATA ACCESS SYSTEMS INC

Blackwood, NJ **ADV PG 123**

RIXON INC

Silver Spring, MD **ADV PG 32**

SPECTRON, A DIV OF NORTHERN

TELECOM INC

Moorestown, NJ **ADV PG 79**

AMCO Engineering Co
Schiller Pk, IL
AM Jacquard Systems
Santa Monica, CA
W A Brown Instruments
Orlando, FL
Chess
Denver, CO
CMC Marketing Corp
Houston, TX
Comark Corp
Waltham, MA
Data Access Systems Inc
Blackwood, NJ
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
DEI-Teleproducts
Escondido, CA
Dennison Kybe
Waltham, MA
Electronic Interface Assoc Inc
New York, NY
Gates Acoustinet Inc
Santa Rosa, CA
General Automation
Anaheim, CA
General Telephone Co of Kentucky
Lexington, KY
General Telephone Co of the Northwest
Everett, WA
Hamilton Sorter Company Inc
Fairfield, OH
Hawaiian Telephone Co
Honolulu, HI
Inmac
Santa Clara, CA
The Nashua, NH
Minicomputer Systems
Elmsford, NY
Modular Furniture Concepts Inc
Torrance, CA
New Jersey Bell Telephone Co
Newark, NJ
Optima Div/Scientific-Atlanta
Tucker, GA
Plessey Peripheral Systems
Irvine, CA
PolyMorphic Systems
Santa Barbara, CA
Rixon Inc
Silver Spring, MD
Singer Co
Librascope Div
Glendale, CA
Southern New England Telephone Co
New Haven, CT
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Standard Electric Time Corp
Springfield, MA
Stantron Div
Wycro Metal Prod
N Hollywood, CA
Systems Furniture Co
Torrance, CA
Tab Products Co
Palo Alto, CA
Tel-Tex Inc
Houston, TX
Terminal Data Corp
Rockville, MD
Van San Corp
City of Industry, CA
Vector Graphic Inc
Westlake Village, CA

Vinyl Plastics Inc
Sheboygan, WI
Western Peripherals Inc
Tustin, CA
The Western Union Telegraph Co
Upper Saddle River, NJ
Wright Line Inc
Worcester, MA

MICROFILM EQUIPMENT, SYSTEMS AND SERVICES

AM Bruning Micrographics
Tustin, CA
Cubic Corp
San Diego, CA
DatagraphiX Inc
San Diego, CA
Eastman Kodak Co
Rochester, NY
Grumman Data Systems Corp
Woodbury, NY
Image Systems Inc
Culver City, CA
Northwest Microfilm Inc
Minneapolis, MN
Xerox Corporation
Stanford, CT

PAPER FOR TERMINALS

DATA ACCESS SYSTEMS INC

Blackwood, NJ **ADV PG 123**

GENERAL ELECTRIC CO — COMMUNICATION EQUIPMENT LEASING AND SERVICE

Schenectady, NY **ADV PGS 152-153**

GRAPHIC CONTROLS

COATED PROD DIV

Buffalo, NY **ADV PG 127**

Anderson Jacobson
San Jose, CA
C & L Terminals Inc
Portland, OR
Computer Transceiver Systems Inc
Paramus, NJ
Continental Resources Inc
Bedford, MA
Data Access Systems Inc
Blackwood, NJ
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
Datametrics Corp
Van Nuys, CA
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of the Northwest
Everett, WA
Graphic Controls
Coated Prod Div
Buffalo, NY
Hewlett-Packard Co
Palo Alto, CA
Inmac
Santa Clara, CA
Lawrence Packaging Supply Corp
Newark, NJ
Qwip Systems/Div Exxon
Orlando, FL
Selecterm Inc
Wakefield, MA
Support Systems International
Richmond, CA
Telautograph Corporation
Los Angeles, CA

Tel-Tex Inc
Houston, TX
Terminal Rentals Inc
Orange, CA
Trans-Lux Corp
Norwalk, CT
Triformation Systems Inc
Stuart, FL
The TRW-Fujitsu Co
Los Angeles, CA
The Western Union Telegraph Co
Upper Saddle River, NJ

POWER DISTRIBUTION, REGULATION

Computer Power Systems Corp
Carson, CA
Topaz DPP Div
Los Angeles, CA

POWER SUPPLIES

ELGAR CORP
San Diego, CA **ADV PG 146**
A D C Magnetics Controls Co
Bloomington, MN
Analog Devices
Norwood, MA
Atlas Energy Systems
South El Monte, CA
California Instruments, Div of Norlin
Industries
San Diego, CA
Clary Corp
San Gabriel, CA
Data General Corporation
Westboro, MA
Datametrics Corp
Van Nuys, CA
Elgar Corp
San Diego, CA
Esterline Angus Instrument Corp
Indianapolis, IN
Galileo Electro-Optics Corp
Sturbridge, MA
General Automation
Anaheim, CA
General Telephone Co of the Northwest
Everett, WA
Glenayre Electronics Inc
Blaine, WA
Hewlett-Packard Co
Palo Alto, CA
Kapusi Laboratories
San Mateo, CA
Leasametric
Foster City, CA
Lorain Products Coproration
Lorain, OH
Nova Electric Mfg Co
Nutley, NJ
Pertec Computer Corp
Peripherals Div
Chatsworth, CA
Powertec Inc
Chatsworth, CA
Racal/Dana Instruments Inc
Irvine, CA
Rental Electronics Inc
Palo Alto, CA
Singer Co
Librascope Div
Glendale, CA
Tekelec-Airtronic S A
Boulonge,
Tektronix Inc
Beaverton, OR
Vertex Electronics Inc
Farmingdale, NY

PROTOCOL CONVERTERS

ARK ELECTRONIC PRODUCTS
Melbourne, FL **ADV PG 68**
EXPANDOR INC
Pittsburgh, PA **ADV PG 144**
INNOVATIVE ELECTRONICS INC
Miami Lakes, FL **ADV PG 142**
KMW SYSTEMS INC
Austin, TX **ADV PG 145**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS**
Cover III, 37, 67

MODEMS PLUS INC
Decatur, GA **ADV PG 38**
PULSECOM DIV/HARVEY HUBBELL
Falls Church, VA **ADV PG 45**
RACAL-TELESYSTEMS INC
Chicago, IL **ADV PG 71**
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA . . **ADV PG Cover II**
Able Computer
Irvine, CA
Air Land Systems Corp
Fairfax, VA
ARK Electronic Products
Melbourne, FL
Associated Computer Consultants
Santa Barbara, CA
Cado Systems Corp
Torrance, CA
Cambridge Telecommunications
Burlington, MA
Chess
Denver, CO
Columbia Data Products
Columbia, MD
Commtext Inc
Crofton, MD
Communications Interface Inc
Minneapolis, MN
CSS Telecommunications
Mountain View, CA
Custom Terminals
Hauppauge, NY
Data Plus Inc
Lorton, VA
Datapoint Corporation
San Antonio, TX
Data Specialties Inc
Northbrook, IL
Data Stream Communications Inc
Mountain View, CA
Digital Datacom Inc
Irvine, CA
Edge Technology
Portland, OR
Expandor Inc
Pittsburgh, PA
Gamma Technology Inc
Palo Alto, CA
Gen/Comp Inc.
Canton, MA
GTE Telenet Communications Corp
Vienna, VA
Industrial Computer Controls Inc
Cambridge, MA
Innovative Electronics Inc
Miami Lakes, FL
Kaufman Research Mfg Inc
Los Altos Hills, CA
KMW Systems Inc
Austin, TX
Micom Systems Inc
Chatsworth, CA

Modems Plus Inc
Decatur, GA
MSI Data Corp
Costa Mesa, CA
Nu Data Corp
Little Silver, NJ
Protocol Computers Inc
Los Angeles, CA
Pulsecom Div/Harvey Hubbell
Falls Church, VA
Quad Systems Inc
Gaithersburg, MD
Racal-Telesystems Inc
Chicago, IL
Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
Sherwood Digital Electronics Corp
Salt Lake City, UT
Sideral Corp
Portland, OR
Signetics Corporation
Sunnyvale, CA
Systar Corporation
San Jose, CA
Tekelec-Airtronic S A
Boulonge,
Teleprocessing Products Inc
Simi Valley, CA
Terminal Data Corp
Rockville, MD
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Trendata/Standard Memories
Santa Ana, CA
Ungermann-Bass
Santa Clara, CA
Via West
Phoenix, AZ

PULSE AND SIGNAL REGENERATORS

Cincinnati Bell
Cincinnati, OH
Continental Resources Inc
Bedford, MA
Electronic Interface Assoc Inc
New York, NY
General Telephone Co of the Northwest
Everett, WA
Interstate Electronics Corp
Anaheim, CA
Racal/Dana Instruments Inc
Irvine, CA
Tekelec-Airtronic S A
Boulonge,
Telecommunications Techniques Corp
Gaithersburg, MD
Tele-Signal Corp
Hauppauge, NY
United Data Services Co Inc
Phoenix, AZ

RIBBONS AND SUPPLIES FOR TERMINALS AND PRINTERS

DATA ACCESS SYSTEMS INC
Blackwood, NJ **ADV PG 123**
GENERAL ELECTRIC CO -
COMMUNICATION EQUIPMENT
LEASING AND SERVICE
Schenectady, NY . . . **ADV PGS 152-153**
MOHAWK DATA SCIENCES CORP
Parsippany, NJ **ADV PG 122**
NEC INFORMATION SYSTEMS INC
Lexington, MA **ADV PG 6**
SIEMENS CORP
Iselin, NJ **ADV PGS 120-121**
Analytical Chem Labs
Elk Grove Village, IL

For local phone numbers of companies, turn to **Vendor Directory, page 301.**

Anderson Jacobson
San Jose, CA
Aspen Ribbons
Boulder, CO
W A Brown Instruments
Orlando, FL
C & L Terminals Inc
Portland, OR
Centronics Data Computer Corp
Hudson, NH
CMC Marketing Corp
Houston, TX
Computer Datacom Inc
Irvine, CA
Continental Resources Inc
Bedford, MA
Control Data Corp
Minneapolis, MN
Data Access Systems Inc
Blackwood, NJ
Data Communications Corp
Memphis, TN
Data Equipment Inc
Sunnyvale, CA
Data General Corporation
Westboro, MA
Dataproducts Corporation
Woodland Hills, CA
Dayco Corp
Dayton, OH
Digital Associates Corp
Stamford, CT
General Electric Co/Communication
Equipment Leasing and Service
Schenectady, NY
General Telephone Co of the Northwest
Everett, WA
Hewlett-Packard Co
Palo Alto, CA
Inmac
Santa Clara, CA
Lawrence Packaging Supply Corp
Newark, NJ
Mohawk Data Sciences Corp
Parsippany, NJ
NEC Information Systems Inc
Lexington, MA
Royal Business Machines Inc
Hartford, CT
Selecterm Inc
Wakefield, MA
Siemens Corp
Iselin, NJ
Tel-Tex Inc
Houston, TX
Vydec Inc
Florham Park, NJ
Wang Laboratories Inc
Lowell, MA
The Western Union Telegraph Co
Upper Saddle River, NJ
Xerox Corporation
Stanford, CT

SATELLITE DELAY COMPENSATION UNITS

American Satellite Company
Germantown, MD
California Microwave Inc
Sunnyvale, CA
Fairchild Space & Electronics Company
Germantown, MD
Industrial Computer Controls Inc
Cambridge, MA
Southern New England Telephone Co
New Haven, CT
Systar Corporation
San Jose, CA
Telecommunications Techniques Corp
Gaithersburg, MD

SELECTION & TRANSFER EQUIPMENT, MONITOR & TEST SWITCHING EQUIPMENT

ATLANTIC RESEARCH CORP
Alexandria, VA ADV PG 85
CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP
Danbury, CT ADV PG 64
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA ADV PG 81
DYNATECH DATA SYSTEMS
Springfield, VA ADV PG 84
INTERTEL INC
Andover, MA ADV PG 87
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ ADV PG 79
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
Marina del Rey, CA ADV PG Cover II
A D C Magnetics Controls Co
Bloomington, MN
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Bradley Telecommunications
Leonia, NJ
Chess
Denver, CO
Codex Corporation
Mansfield, MA
Coherent Communications
Hauppauge, NY
Continental Resources Inc
Bedford, MA
Data Control Systems
Div of General Indicator Corp
Danbury, CT
Dataproducts New England
Wallingford, CT
Data Set Cable Co Inc
Ridgefield, CT
Datascwitch
Norwalk, CT
DigiLog Systems Inc
Network Control Div
Horsham, PA
Dranetz Engineering Labs Inc
S Plainfield, NJ
Dynatech Data Systems
Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Epicom Inc
Altamonte Springs, FL
General Telephone Co of the Northwest
Everett, WA
Hekimian Labs Inc
Rockville, MD
Interactive Systems/3M
Ann Arbor, MI
Intermetrics Inc
Cambridge, MA
International Data Sciences Inc
Lincoln, RI
Intertel Inc
Andover, MA
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Sun Information Services Co
Wayne, PA

T-Bar Inc
Wilton, CT
Telecommunications Techniques Corp
Gaithersburg, MD
Tele-Signal Corp
Hauppauge, NY
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Triton Engineering Inc
Gaithersburg, MD

SELECTION & TRANSFER EQUIPMENT, PATCHING EQUIPMENT

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CODEX CORPORATION
Mansfield, MA ADV PGS 5,34-35
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA ADV PG 81
DYNATECH DATA SYSTEMS
Springfield, VA ADV PG 84
EXPANDOR INC
Pittsburgh, PA ADV PG 144
INTERTEL INC
Andover, MA ADV PG 87
SPECTRON, A DIV OF NORTHERN
TELECOM INC
Moorestown, NJ ADV PG 79
A D C Magnetics Controls Co
Bloomington, MN
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Chess
Denver, CO
Codex Corporation
Mansfield, MA
Coherent Communications
Hauppauge, NY
Data Set Cable Co Inc
Ridgefield, CT
DigiLog Systems Inc
Network Control Div
Horsham, PA
Dynatech Data Systems
Springfield, VA
Electronic Interface Assoc Inc
New York, NY
Epicom Inc
Altamonte Springs, FL
Expandor Inc
Pittsburgh, PA
General Telephone Co of the Northwest
Everett, WA
International Data Sciences Inc
Lincoln, RI
Intertel Inc
Andover, MA
Nuclear Engineering Services Co
Sunnyvale, CA
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Moorestown, NJ
T-Bar Inc
Wilton, CT
Telecommunications Techniques Corp
Gaithersburg, MD
Tele-Signal Corp
Hauppauge, NY
Triton Engineering Inc
Gaithersburg, MD

SELECTION & TRANSFER EQUIPMENT, RECONFIGURATION EQUIPMENT

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CODEX CORPORATION
Mansfield, MA **ADV PGS 5,34-35**
EXPANDOR INC
Pittsburgh, PA **ADV PG 144**
INTERTEL INC
Andover, MA **ADV PG 87**
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TELECOM INC**
Moorestown, NJ **ADV PG 79**
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Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Chess
Denver, CO
Codex Corporation
Mansfield, MA
Datswitch
Norwalk, CT
Electrodata Inc
Bedford Heights, OH
Electronic Interface Assoc Inc
New York, NY
Expandor Inc
Pittsburgh, PA
General Telephone Co of the Northwest
Everett, WA
Hawaiian Telephone Co
Honolulu, HI
Intertel Inc
Andover, MA
Kapusi Laboratories
San Mateo, CA
NCR Comten Inc
St Paul, MN
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
T-Bar Inc
Wilton, CT
Teleprocessing Products Inc
Simi Valley, CA
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA

SWITCHES, DATA COMMUNICATIONS, AUTOMATIC

ATLANTIC RESEARCH CORP
Alexandria, VA **ADV PG 85**
AVANTI COMMUNICATIONS CORP
Newport, RI **ADV PG 62**
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**
**DIGITAL COMMUNICATIONS ASSOC
INC**
Norcross, GA **ADV PG 36**
DIGITAL COMMUNICATIONS CORP
DIV MA/COM
Germantown, MD **ADV PG 43**
GANDALF DATA INC
Wheeling, IL **ADV PG 70**
INTERTEL INC
Andover, MA **ADV PG 87**
MICOM SYSTEMS INC
Chatsworth, CA **ADV PGS
Cover III,37,67**

**RCA SERVICE CO
DATA SERVICES**
Cherry Hill, NJ **ADV PG 154**
**SPECTRON, A DIV OF NORTHERN
TELECOM INC**
Moorestown, NJ **ADV PG 79**
TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP
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Action Communication Systems Inc
Dallas, TX
A D C Magnetics Controls Co
Bloomington, MN
American Used Computer Co
Boston, MA
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Avanti Communications Corp
Newport, RI
Boston Financial & Equity Corp
Boston, MA
Cambridge Telecommunications
Burlington, MA
Chess
Denver, CO
Computer Sciences Corp
El Segundo, CA
Data General Corporation
Westboro, MA
Data Plus Inc
Lorton, VA
Datapoint Corporation
San Antonio, TX
Datswitch
Norwalk, CT
Develcon Electronics Inc
Doylestown, PA
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digital Associates Corp
Stamford, CT
Digital Communications Assoc Inc
Norcross, GA
Digital Communications Corp
Div MA/Com
Germantown, MD
Electronic Interface Assoc Inc
New York, NY
Frederick Electronics Corp
Frederick, MD
Gandalf Data Inc
Wheeling, IL
General Telephone Co of the Northwest
Everett, WA
Giltronix Inc
Palo Alto, CA
GTE Telenet Communications Corp
Vienna, VA
Harris-Darconz
Albuquerque, NM
InteCom Inc
Dallas, TX
International Data Sciences Inc
Lincoln, RI
Intertel Inc
Andover, MA
Kapusi Laboratories
San Mateo, CA
Micom Systems Inc
Chatsworth, CA
Micro Switch Div
Honeywell Inc
Freeport, IL
Muirhead Inc
Mountainside, NJ
Omnitex Data
Phoenix, AZ
Peripherals Corp
Bohemia, NY

Raytheon Data Systems
Mini-Computer Div
Mansfield, MA
RCA Global Communications Inc
New York, NY
RCA Service Co
Data Services
Cherry Hill, NJ
Scientific-Atlanta Inc
Satcom Division
Atlanta, GA
Singer Co
Librascope Div
Glendale, CA
Southern New England Telephone Co
New Haven, CT
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
T-Bar Inc
Wilton, CT
Telecommunications Techniques Corp
Gaithersburg, MD
TRAN Telecommunications Corp
A Sub of Amdahl Corp
Marina Del Rey, CA
Ungermann-Bass
Santa Clara, CA

SWITCHES, DATA COMMUNICATIONS, MANUAL

ATLANTIC RESEARCH CORP
Alexandria, VA **ADV PG 85**
DIGILOG SYSTEMS INC
NETWORK CONTROL DIV
Horsham, PA **ADV PG 81**
DIGITAL PATHWAYS INC.
Mountain View, CA **ADV PG 147**
EXPANDOR INC
Pittsburgh, PA **ADV PG 144**
INTERTEL INC
Andover, MA **ADV PG 87**
MEMOREX CORP
Cupertino, CA **ADV PG 32A**
MULTI-TECH SYSTEMS INC
New Brighton, MN . . . **ADV PGS 58-59**
**RCA SERVICE CO
DATA SERVICES**
Cherry Hill, NJ **ADV PG 154**
RIXON INC
Silver Spring, MD **ADV PG 32**
**SPECTRON, A DIV OF NORTHERN
TELECOM INC**
Moorestown, NJ **ADV PG 79**
A D C Magnetics Controls Co
Bloomington, MN
American Used Computer Co
Boston, MA
Applied Delta Systems Inc
Bellmawr, NJ
Atlantic Research Corp
Alexandria, VA
Boston Financial & Equity Corp
Boston, MA
Chess
Denver, CO
Cincinnati Bell
Cincinnati, OH
Data General Corporation
Westboro, MA
Data Set Cable Co Inc
Ridgefield, CT
DigiLog Systems Inc
Network Control Div
Horsham, PA
Digital Associates Corp
Stamford, CT
Digital Pathways Inc.
Mountain View, CA
EECO Incorporated
Santa Ana, CA

Electrodata Inc
Bedford Heights, OH
Electronic Interface Assoc Inc
New York, NY
Expander Inc
Pittsburgh, PA
General Telephone Co of the Northwest
Everett, WA
General Telephone Co of Wisconsin
Sun Prairie, WI
Giltronix Inc
Palo Alto, CA
Harbor Electronics
Ridgefield, CT
Hawaiian Telephone Co
Honolulu, HI
Inmac
Santa Clara, CA
International Data Sciences Inc
Lincoln, RI
Intertel Inc
Andover, MA
Memorex Corp
Cupertino, CA
Micro Switch Div
Honeywell Inc
Freeport, IL
Muirhead Inc
Mountainside, NJ
Multi-Tech Systems Inc
New Brighton, MN
NCR Comten Inc
St Paul, MN
Omnitex Data
Phoenix, AZ
RCA Global Communications Inc
New York, NY
RCA Service Co
Data Services
Cherry Hill, NJ
Rixon Inc
Silver Spring, MD
Southern New England Telephone Co
New Haven, CT
Spectron, a Div of Northern Telecom Inc
Moorestown, NJ
Support Systems International
Richmond, CA
T-Bar Inc
Wilton, CT
Tek-Com
San Jose, CA
Telecommunications Techniques Corp
Gaithersburg, MD
Trompeter Electronics Inc
Chatsworth, CA

Versitron Inc
Washington, DC
Vertex Electronics Inc
Farmingdale, NY

UNINTERRUPTIBLE POWER SUPPLIES, LINE CORRECTORS, ETC

ELGAR CORP
San Diego, CA **ADV PG 146**
Advanced Electronics Design Inc
Sunnyvale, CA
Atlas Energy Systems
South El Monte, CA
Behlman Engineering Corp
Carpinteria, CA
Boschert Inc
Sunnyvale, CA
California Instruments, Div of Norlin Industries
San Diego, CA
Chess
Denver, CO
Clary Corp
San Gabriel, CA
Computer Power Systems Corp
Carson, CA
Cyberex Inc
Mentor, OH
Deltac Corp
Div of Gould Inc
San Diego, CA
Dranetz Engineering Labs Inc
S Plainfield, NJ
Elgar Corp
San Diego, CA
Emerson Industrial Controls Div
Santa Ana, CA
Exide Electronics Corp
Philadelphia, PA
Franklin Electric Programmed Power Div
Sunnyvale, CA
Gates Energy Products Inc
Denver, CO
Inmac
Santa Clara, CA
KeyTek Instrument Corp
Burlington, MA
Lambda Electronics
Melville, NY
Lorain Products Corporation
Lorain, OH
MSI Data Corp
Costa Mesa, CA
Nova Electric Mfg Co
Nutley, NJ
Powertec Inc
Chatsworth, CA
Randolph Engineering
Austin, TX
Sola, A unit of General Signal
Elk Grove Vill, IL
Tab Products Co
Palo Alto, CA
Teledyne Inet
Torrance, CA

Topaz DPP Div
Los Angeles, CA
Topaz Inc
San Diego, CA

VOICE ADAPTERS

INTERTEL INC
Andover, MA **ADV PG 87**
RACAL-MILGO
Miami, FL **ADV PGS 30-31**
RIXON INC
Silver Spring, MD **ADV PG 32**
Applied Delta Systems Inc
Bellmawr, NJ
Heuristics Inc
Sunnyvale, CA
Intertel Inc
Andover, MA
Master Specialties Co
Costa Mesa, CA
Mostek Corp
Carrollton, TX
Racal-Milgo
Miami, FL
Rixon Inc
Silver Spring, MD
Time & Space Processing Inc
Cupertino, CA

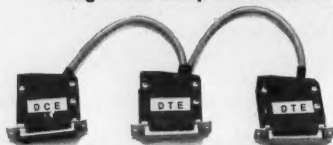
VOICE DIGITIZERS

American Microsystems Inc
Santa Clara, CA
Cincinnati Electronics Corp
Cincinnati, OH
E-Systems Inc
ECI Div.
St. Petersburg, FL
E-Systems Inc
Garland Div
Garland, TX
GTE Sylvania/Voice Security
Needham Heights, MA
Heuristics Inc
Sunnyvale, CA
Interstate Electronics Corp
Anaheim, CA
Mostek Corp
Carrollton, TX
Motorola Semiconductor Prod
Phoenix, AZ
Precision Monolithics Inc
Santa Clara, CA
Signetics Corporation
Sunnyvale, CA
STC Communications Corp
Sub of Storage Technology Corp
Broomfield, CO
Telecommunications Techniques Corp
Gaithersburg, MD
Terracom
San Diego, CA
Time & Space Processing Inc
Cupertino, CA

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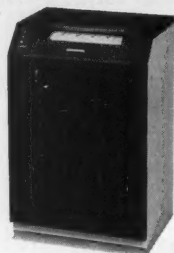
COMMUNICATIONS MADE EASY

Diagnostic Loop Back Cables



Loop back diagnostic cables provide for routing all output signals to all input signals. An error condition will be indicated as a specified test number and displayed by the seven segment LED. Further actuation of the diagnostic test switch will allow for fault isolation to the "chip" level. This fault isolation technique eliminates classical "finger pointing" when the network goes down.

Async/Sync RS-232 Serial, Parallel 300 LPM Printers



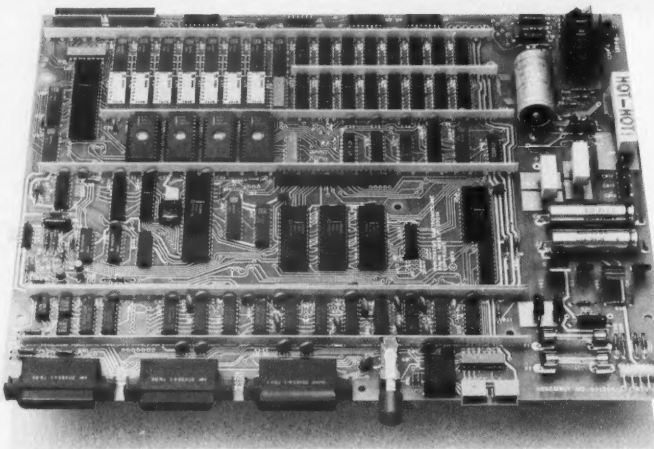
The "Innovator" line printer family consists of both 80 and 132 column printers utilizing the heavy duty impact chain print technology. Fully formed clear upper and lower case characters are generated on up to six copies.

MCS-80 Protocol Converter

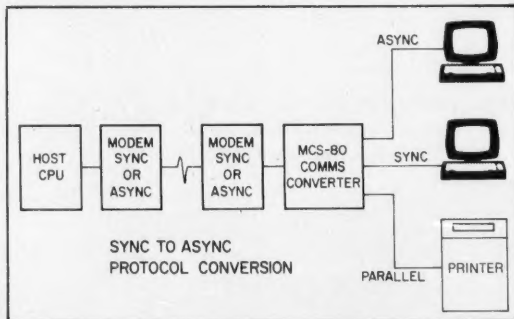
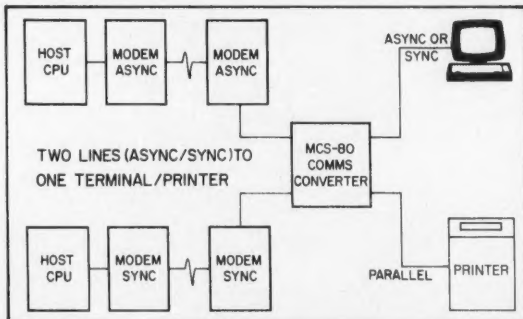


The MCS-80 multiport protocol converter enables intercommunication of data between multiple computers or terminals using different line discipline protocols. Protocol converters are fully self contained and allow complete transparency and connection of terminals to most popular IBM, Univac, Honeywell, Burroughs and NCR computers.

The MCS-40 interface is a micro processor based controller that is the heart of all IEI communications products. Thousands of these interface boards have been shipped and are operational in the field. All external connections are PC board mounted, thereby eliminating most cabling problems. The 8085 micro processor provides for extensive diagnostic capability and self test checking.



- *8085 Microprocessor, 10 mhz
- *16K EPROM
- *16K Static RAM
- *56 Program Switches
- *Self Contained Power Supply
- *Seven Segment LED Display for Diagnostic and System Status
- *Three Serial RS-232/CL Ports
- *Async/Sync
- *One Buffered Parallel Port for Keyboard, Tape, Printer, or LED's
- *Nationwide Service



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Time is precious Why lose it?



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PDP-11 ¹	TCU-100 • \$495
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LSI-11/2 ¹	TCU-50D • \$325
Multi-Bus ²	TCU-410 • \$325
EXORcisor ³	TCU-68 • \$325
HP 2100	TCU-2100 • \$395
Lockheed SUE	TCU-200 • \$550
Naked Mini ⁴	TCU-310 • \$385

If automatic and accurate date and time entry is important to your system on power-up — you need a Digital Pathways battery supported calendar clock. All Digital Pathways' TCUs have on board NICAD batteries to maintain date and time during power down (typically up to



Serial Line Clock . . . SLC-1 • \$640
(RS 232 or 20mA) Microprocessor controlled.
Auto message intercept and response.
10 Digit display option \$190.

three months). Timing is provided by a crystal controlled oscillator. Prices are U.S. domestic single piece. Quantity discounts available.

For more information on these timely products, contact:

Digital Pathways Inc.
1260 L'Avenida
Mountain View, CA 94043
Phone (415) 969-7600



¹Trademark of Digital Equipment Corp.

²Trademark of Intel Corp.

³Trademark of Motorola Inc.

⁴Trademark of Computer Automation Inc.

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ASYNCHRONOUS/BI-SYNCHRONOUS PROTOCOL CONVERSION

\$**1495**



The BLACK BOX Protocol Converter, Model A/S-1 can make the Async/Bi-sync conversion you need.

Protocol conversion means more than just converting codes. It means "total bi-directional communications" using the proper code, at the proper data rates, in a proper specified format.

The Black Box Protocol Converter is an IBM® 2770, 2780, 3780, 2741, 3741 and other protocols. Alone, the Black Box Protocol Converter can communicate with a bi-synchronous computer port or terminal and maintain system continuity. With an asynchronous terminal attached to the A/S-1, it will transmit and receive data, main-

taining the prescribed bi-sync format, (protocol).

The Black Box Protocol Converter is designed around a microprocessor. Firmware programs are stored in interchangeable non-volatile programmable read only memory (PROM). Random access memory (RAM) is provided for data buffering.

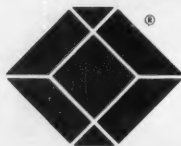
There's much more to the protocol converter. For more information call our Protocol Department or ask us to send you our BLACK BOX® Catalog of data communications devices. It's free.

WARRANTY

The Black Box Protocol Converter has a full one-year warranty. If, for any reason the Protocol Converter fails to perform as prescribed, the Protocol Converter will be replaced, free of charge. (Abuse or misuse cancels product warranty.) In fact, we're so sure the Protocol Converter will perform as stated, we offer a 30-day trial, money back guarantee. Try the protocol converter for 30-days, if you're not satisfied, return it to us for a full refund.

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The IBM Connection

The BAC-HASP protocol converter allows data transfers between IBM host computers and remote ASCII peripheral equipment. It communicates with the host in EBCDIC via IBM HASP multi-leaving RJE workstation binary synchronous protocol and with the user-attached devices in serial RS-232 or byte parallel ASCII. The BAC-HASP and attached devices emulate an IBM System/360 model 30 with console and multiple input and/or output devices.

The Tektronix Connection

The BAC-3270 protocol converter allows operation of Tektronix equipment at high telecommunications data rates while insuring accurate data transmission. It communicates with the IBM host in EBCDIC via IBM-3271 binary synchronous protocol, performs all necessary EBCDIC to ASCII and ASCII to EBCDIC translations and transmits it in ASCII serial asynchronous format to and from most Tektronix 4000 series graphic and alphanumeric devices. The BAC-3270 is easily attached to the IBM host system and allows attachment of multiple devices on one communications line.

The Electrostatic Connection

The VP series Random Vector Processor coupled with any of KMW's standard communications devices allows a user to effectively utilize any of the standard electrostatic plotters in a communications environment. The ability to handle random vector input plus the widest variety of communications front-ends and lowest cost in the industry make the VP an attractive offering for anyone considering remote graphics.

BAC-2780/3780 Series

Models in the BAC-2780/3780 series send and receive EBCDIC data via IBM binary synchronous protocol, perform all required error-checking functions, translate the data to ASCII, and output it in serial asynchronous format to and from several types of user-attached receiving devices, including CalComp, Nicolet-Zeta, Houston Instrument and Benson Varian pen plotters. BAC-2780/3780 feature full BSC "handshaking" and CRC-16 data error detection and recovery.

The System 34 Connection

Model BAC-34 Protocol Converter allows attachment of a wide variety of peripheral equipment (such as graphic CRT's, printers

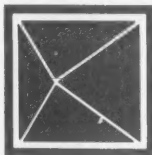
and plotters) to an IBM System/34 Computer. The BAC-34 communicates with the System/34 using EBCDIC data and IBM binary synchronous protocol. This system performs all required error-checking and EBCDIC to ASCII and ASCII to EBCDIC translations.

The Honeywell Connection

Model BAC-115 sends and receives ASCII data via Honeywell GRTS synchronous protocol, performs all required error-checking functions, translates slew codes to ASCII forms control characters, and communicates in serial asynchronous format to and from user-attached devices. This system allows operation of a wide variety of peripheral equipment at high telecommunications data rates, insuring error-free operation by utilizing Honeywell GRTS remote computer synchronous protocol with parity and block check character error-checking.

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RCA • NASA • Kaiser Aluminum
Monsanto • Hughes • FMC
Northrup • IDS • Raytheon
Anaconda and others.



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SYSTEMS
CORPORATION**

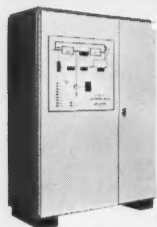
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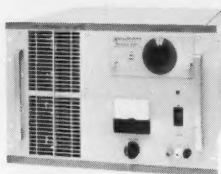
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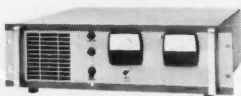
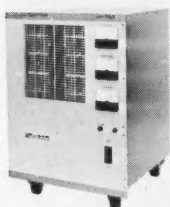
Elgar's UPS include rectifier/charger, battery, inverter, synchronizing and switching equipment to assure precise, uninterruptible power to critical loads. Typical performance includes 1% voltage regulation, 5% maximum total harmonic distortion.



AC POWER SOURCES / FREQUENCY CONVERTERS

50/60Hz INPUT, 15Hz TO 10KHz OUTPUT, 120VA TO 27KVA.

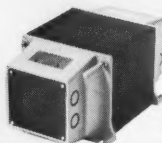
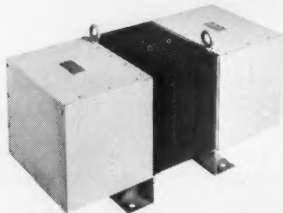
Elgar's AC Power Sources provide fixed, variable, or programmable output voltages and frequencies with the largest number of single-, two-, or three-phase models available. Typical specifications include 25 microseconds response time, 0.4% maximum distortion and 0.1% regulation.



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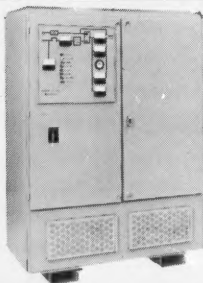
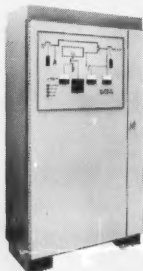
Elgar's AC Line Conditioners solve every power line problem except complete interruptions and are available in 1KVA, 3KVA and 5KVA single phase, 3, 9 and 15KVA three-phase models.



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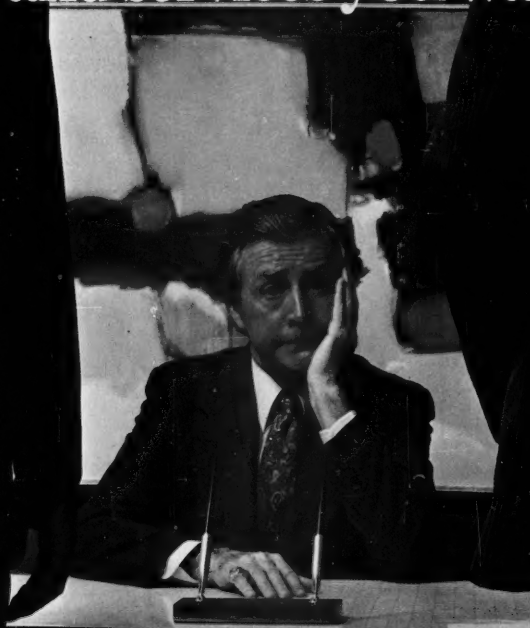
For further catalog information, turn to
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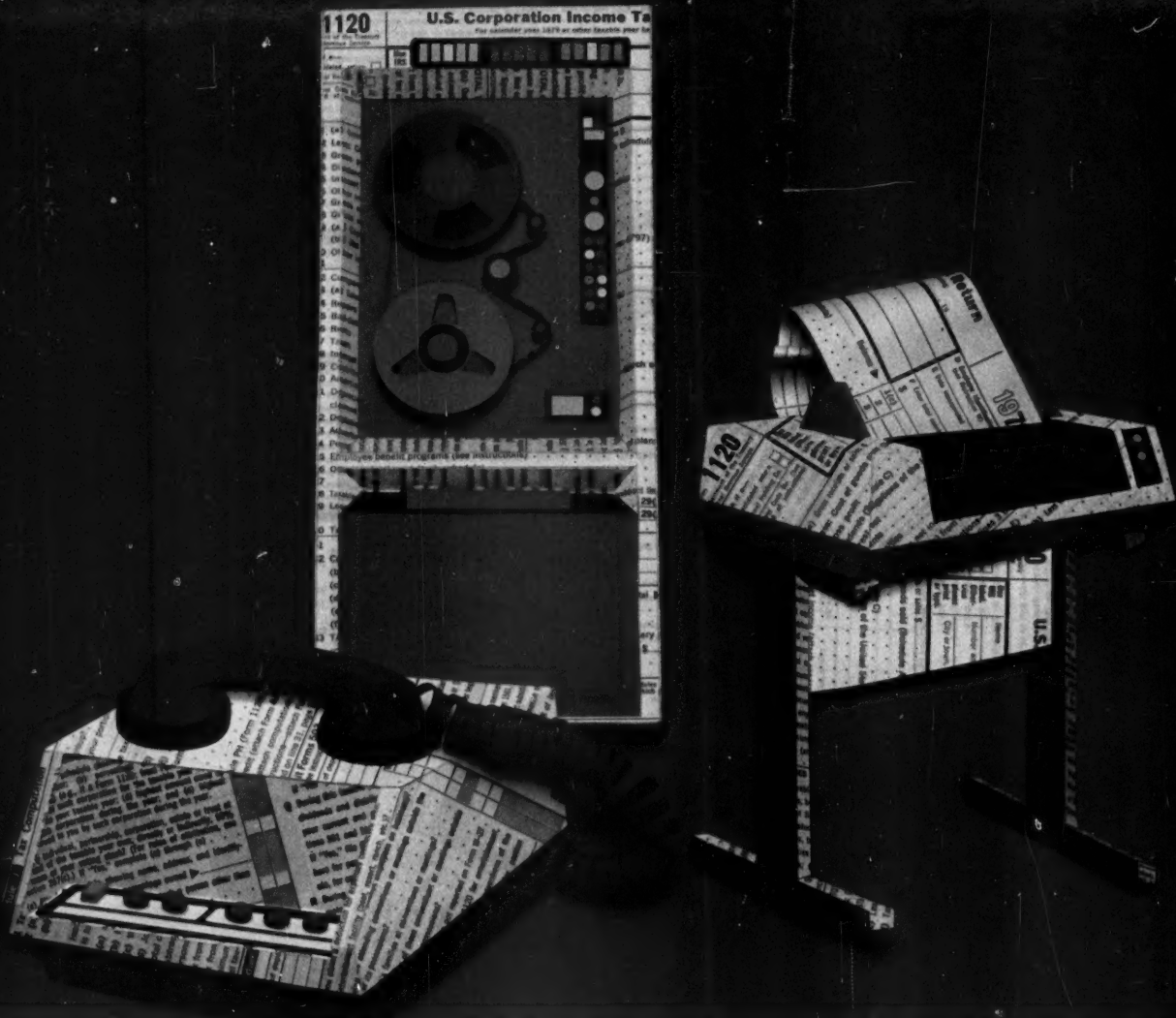


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Gilbert Held, U.S. Office of Personnel Management, Macon, Ga.

Why taxes matter in selecting equipment

Recessionary times are forcing users to acquaint themselves with available tax options when buying or leasing data communications gear.

Reduced to the barest, there are only two ways to obtain data communications equipment—purchase and lease. Yet the methods of structuring the lease or purchase agreement and of calculating equipment depreciation can yield sizable differences on an enterprise's balance sheet. Although most organizations have tax and accounting counsel to advise the communications specialist on appropriate procurement methods, all

communications professionals should be aware of the basic economic and legal principles of equipment transactions.

When equipment is purchased, the title and resulting ownership pass from the vendor to the buyer. Generally, the responsibility for maintenance also passes to the buyer, who may have to negotiate a service agreement with the vendor or a third party. Although buying

equipment usually requires a large one-time outlay, as opposed to the many smaller payments for leased equipment, there are ways to reduce the expenditure. A buyer may borrow funds and amortize payments over a period of time. He may purchase half of the required equipment on the last day of the year and the remainder on the first day of the next year, thereby spreading the expenditure over two years. The advantage is that the buyer can obtain tax deductions and tax credits for the investment in and the depreciation of owned data communications equipment.

A multiplexer with a useful life of at least, say, five years is an example of equipment eligible for the investment credit. The investment credit varies according to the expected life of the asset, as denoted in Table 1, and could reduce a purchaser's tax liability by up to 10 percent. The investment credit reduces the tax obligation dollar for dollar, whereas a tax deduction lowers adjusted net income on which taxes are computed. Thus, if a firm that otherwise would have a \$150,000 tax bill purchased \$40,000 worth of multiplexers, each with a useful life of five years, it would receive a tax credit of \$2,664 (6.66 percent of \$40,000), and its adjusted tax bill would be lowered to \$147,336. In other words, the tax credit lowers the effective purchase cost of the multiplexers to \$37,336.

Depreciation, another way to lessen the tax liability, allows deductions for the obsolescence of equipment because of technical change or wear and tear. A company can deduct for depreciation when computing federal income taxes. The larger the depreciation, the larger one's deduction; the larger one's deduction, the lower one's net income and, hence, actual tax liability.

There are several depreciation methods for equipment tax purposes, among them, straight line, sum of the years' digits, and double-declining balance. Accelerated depreciation, which includes each method but straight line, reduces taxes in the early years of an asset's life because the deductions are larger during those early years. This can increase the cash available for reinvestment. Selecting a particular method depends not only on certain federal rules and regulations but also on corporate policy and generally accepted accounting practices.

To examine each depreciation method, assume that the multiplexers purchased for \$40,000 and with a life expectancy of five years have at the end of that period an estimated salvage value of \$5,000. For straight-line depreciation, we determine the annual amount by dividing the equipment cost less the estimated salvage

value by the years of the equipment's economic life:

$$\frac{\$40,000 \text{ cost} - \$5,000 \text{ salvage value}}{5 \text{ years}} = \$7,000/\text{year}$$

The declining-balance method requires applying a constant depreciation rate each year to the undepreciated value of the asset at the close of the previous year. The most commonly used declining-balance method is double declining balance, or DDB, as it is known in financial circles. Since the straight-line rate is 1 divided by years of equipment life, the DDB method results in twice that, or a rate of 2 over useful years. Returning to our example, the straight rate is 1 over 5, or 20 percent; hence, the DDB rate is 40 percent, which is applied to the multiplexers' full purchase price without any allowance for salvage value. Thus, depreciation under the DDB method is $\$40,000 \times 40 \text{ percent} = \$16,000$ for the first year, $\$40,000 - \$16,000 \times 40 \text{ percent} = \$9,600$ for the second year, and so on, as the undepreciated balance declines and the original cost is absorbed.

Using the sum-of-the-years'-digits method, a sliding scale accepted by accountants and the Internal Revenue Service, we can figure the yearly depreciation allowance by first computing the sum of the years' digits, which in our example is year 1 + year 2 + year 3 + year 4 + year 5 = 15. Next, we divide the remaining years of the equipment's economic life by the sum of the years' digits and multiply the resulting fraction by the depreciable cost, which is the equipment cost minus the asset's salvage value. Returning to the multiplexer example, the depreciation for year 1 would be $5 + 15 \times (40,000 - 5,000) = \$11,667$, while for year 5 the amount would be $1 + 15 \times (40,000 - 5,000) = \$2,333$. Table 2 compares each depreciation method as it is applied to the \$40,000 multiplexer with a \$5,000 salvage value and a five-year lifespan.

Time and money

In selecting a depreciation method for purchased equipment, an organization must consider its current and projected tax rate and the value of money by time. Current and expected marginal tax rates are important since they translate the depreciation deduction into actual tax dollars saved. (Marginal tax rates are derived from and usually equal a company's tax bracket.) For example, an organization with a marginal tax rate of 50 percent would save \$1 in taxes for every \$2 of depreciation deduction per year.

Understanding the time value of money is critical to comparing an uneven series of payments or benefits, and its computation requires a technique known as present-value discounting. To understand present-value discounting, it is easier first to consider the compounding of money. If we deposit P_0 in a savings account earning interest at a rate i and leave the money in the account for one period of time, the principal and compounded interest P_N at the end of that period N becomes

$$P_N = P_0 (1+i)^N$$

If we deposit \$100 at an interest rate of 10 percent

Table 1 Investment tax credit

EQUIPMENT'S LIFE EXPECTANCY (YEARS)	CREDIT AS PERCENT OF PURCHASE PRICE
3 OR MORE, BUT LESS THAN 5	3.33
5 OR MORE, BUT LESS THAN 7	6.66
7 OR MORE	10.00

Table 2 Depreciation methods
(\$40,000 asset, \$5,000 salvage value, 5-year life)

YEAR	DEPRECIATION METHOD		
	STRAIGHT LINE	DOUBLE DECLINING BALANCE	SUM OF THE YEARS' DIGITS
1	\$7,000	\$16,000	\$11,667
2	7,000	9,600	9,333
3	7,000	5,760	7,000
4	7,000	3,456	4,667
5	7,000	2,074	2,334
TOTAL	\$35,000	[†] \$36,890	[‡] \$35,001

[†]ACTUAL DEPRECIATION IN FIFTH YEAR IS \$2,074 - \$1,890 (\$36,890 - \$35,000), BECAUSE THE TOTAL CANNOT EXCEED THE ASSET MINUS THE SALVAGE VALUE.

[‡]THIS IS ROUNDED OFF TO \$35,000.

for two years, at the end of that period it would grow to

$$P_2 = \$100 (1 + .10)^2 = \$100 (1.21) = \$121$$

To determine today's value of tomorrow's payment or receipt, we must find the present value of the future payment or receipt. The present value P_0 and its relationship to a payment or receipt at a time period N is expressed as

$$P_0 = \frac{P_N}{(1+i)^N}$$

As an example of the use of present values, consider the difference between receiving \$110 today or \$121 in two years. If we invest that money at a 10 percent interest rate, we want to compare the present value of \$121 discounted at 10 percent with the \$110 we could receive today. To find the present value, we calculate:

$$P_0 = \frac{P_N}{(1+i)^N} = \frac{121}{(1+.10)^2} = \frac{121}{1.21} = \$100$$

Since the present value two years hence of \$121 at 10 percent is \$100, it is preferable to receive \$110 today. To assist in present-value computations, many financial publications and books contain tables of the term $1/(1+i)^N$ for various values of i and N . This term is known as the present value interest factor (PVIF). To cite an example, a tax savings of \$1,000 due in five years would have a present value of \$620.90, assuming a 10 percent interest rate. Table 3 is an extract from a financial table showing PVIFs for a 10-year period for selected interest rates. The present value P_0 is the product of P_N and PVIF, and the table simplifies the computation for standard periods and rates.

Lease arrangements

Unlike an equipment purchase, leasing results in no transfer of title to the lessee. Thus, although lease pay-

ments are ordinary deductible business expenses, the lessee can neither depreciate the equipment nor use the investment tax credit to reduce his tax obligation.

Under most lease arrangements, the lessee is obligated to pay a fixed amount per time period, usually monthly, for using the leased equipment. Maintenance is often provided by the lessor and is included in the lease cost. Once a lease expires, the lessee and lessor must come to terms on a new lease unless the original lease contains a renewal clause. The lessee, before renewing a lease, should consider other equipment, current corporate requirements, any new lease terms imposed by the lessor, and other products available from the current lessor. If the lease is not renewed, the lessee's obligation may range from packaging and returning the equipment to paying a fee if he violates a multiperiod lease clause.

If we exclude the time value of money and equipment maintenance costs, we can determine the simple lease versus purchase break-even point, which is

$$N = \frac{P}{L}$$

where P = Purchase cost

L = Monthly lease cost

N = Number of months needed to break even

Thus, if equipment costs \$5,000 and the lease costs \$250 per month, the break-even point is 20 months. This means that equipment ownership is preferable if equipment use is expected to exceed that period of time. Table 4 summarizes the key criteria of lease versus purchase decisions.

Two common lease variations are lease with option to purchase (LWOP) and lease with ownership. Under the first contract, a portion of each monthly payment is set aside and applied toward the purchase price of

Table 3 Present dollar value of payment

YEAR	INTEREST RATES		
	9.75%	10%	10.25%
1	.9112	.9091	.9070
2	.8302	.8264	.8227
3	.7565	.7513	.7462
4	.6893	.6830	.6768
5	.6280	.6209	.6139
6	.5722	.5645	.5568
7	.5214	.5132	.5051
8	.4751	.4665	.4581
9	.4329	.4241	.4155
10	.3944	.3855	.3769

the equipment. Under the second agreement, ownership passes to the lessee upon the last lease payment. Because no leasing company can be expected to give something away for nothing, it is reasonable to assume that the monthly lease cost of these two variations will usually exceed the payments required under the terms of a conventional lease agreement.

Hedges

LWOP permits a firm to decide if it should purchase the equipment while it builds equity with each payment. Other advantages include permitting the lessee to hedge on quantities and to later return excess equipment. Also, since a company avoids a large cash outlay, it can use LWOP as a cash-management tool; that is, the firm continues lease payments until corporate funds are available to pay for the purchase price less the payment accruals for the equipment.

Four areas of an LWOP plan deserve special attention: the required monthly payment, the percentage of each payment that is accrued toward the purchase price of the equipment, the maximum percentage of the equipment purchase price that can be accrued, and the purchase price of the equipment. Once we determine these factors, we can compute the number of months required to reach the maximum accrual. This is important because lease payments after that time are treated as conventional lease payments, and equity buildup stops.

For example, consider a multiplexer with a purchase price of \$1,120 and monthly lease cost of \$80. We must do more than merely divide the purchase price by the monthly payment. Assume that 50 percent of the lease payments can be credited to the purchase price up to a maximum of 75 percent of the purchase price. The number of monthly payments M until the maximum accruals are reached can be expressed as

Table 5 LWOP conversion costs

TIME (MONTHS)	ACCRUED CREDITS	MAXIMUM CREDIT	COST TO PURCHASE
1	$\$80 \times 1 \times 50\% = \40	\$340	$\$1,120 - \$40 = \$1,080$
6	$80 \times 6 \times 50\% = 240$	840	$1,120 - 240 = 880$
12	$80 \times 12 \times 50\% = 480$	840	$1,120 - 480 = 640$
24	$80 \times 24 \times 50\% = 960$	840	$1,120 - 840 = 280$

$$M = \frac{P \times \text{MAR}}{L \times \text{LAR}}$$

where P = Purchase price

MAR = Maximum accrual rate

L = Monthly lease cost

LAR = Lease accrual rate

Plugging in the numbers, we obtain

$$M = \frac{1120 \times .75}{80 \times .50} = 21 \text{ months}$$

Thus, the first 21 monthly lease payments of \$80 will yield \$40 credit each month toward the purchase of the multiplexer. Table 5 shows tabulations of several purchase costs based on the conversion of the lease to purchase at different time periods. The figure illustrates the interrelationship of total lease payments, accruals, and the purchase cost of the multiplexer upon conversion of the lease to purchase over time.

In analyzing the differences between leasing and purchasing equipment, a company must consider many factors, including tax-credit eligibility, the depre-

Table 4 Lease versus purchase

DECISION CRITERIA	LEASE	PURCHASE
TITLE	WITH LESSOR	PURCHASER
PAYMENTS	LOWER BUT REPETITIVE	LARGE ONE-TIME
MAINTENANCE	USUALLY INCLUDED	SEPARATE AGREEMENT
TAX CREDIT	NOT AVAILABLE	AVAILABLE
DEPRECIATION	NOT AVAILABLE	AVAILABLE
DISCOUNT POTENTIAL	NONE TO MINIMAL	HIGHER
REPLACEMENT	END-OF LEASE OR ANYTIME WITH PENALTY	MORE DIFFICULT BECAUSE OF INVESTMENT
PRICE RISE (TAKES INTO ACCOUNT INFLATION)	CAN OCCUR AT LEASE RENEWAL TIME	PURCHASE RESULTS IN FIXED COST

Lease changes. The graph shows comparisons of lease payments, accruals, and the cost of the multiplexer upon converting a lease to a purchase agreement.

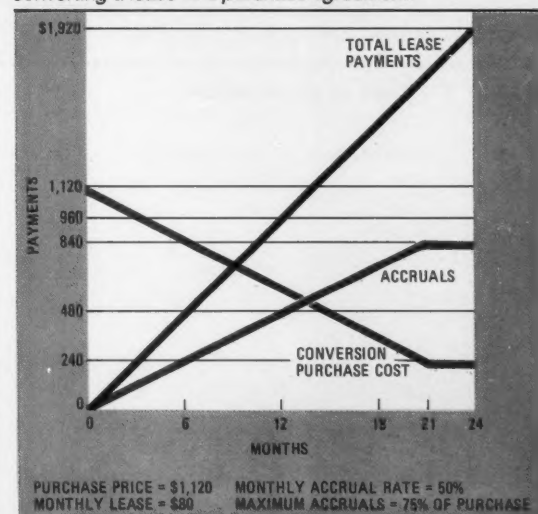


Table 6 Computing lease cost

YEAR	PAYMENT	LEASE COST AFTER TAX (LEASE COST x (1 - .5))	10% PRESENT VALUE INTEREST FACTOR	PRESENT VALUE OF COST OF LEASING
1	\$960	\$480	.909	\$436
2	960	480	.826	396
3	960	480	.751	360
TOTAL PRESENT VALUE OF COST OF LEASING				\$1,192

ciation schedule, the corporate tax rate, and the time value of money. For simplicity, assume that we lease a multiplexer for \$80 per month but can make one payment of \$960 at the end of the year. This permits us to use three yearly PVIFs for a three-year lease instead of 36 monthly PVIFs. To compute the present-value cost of leasing, we must first determine the lease cost after tax and then multiply that number by the appropriate PVIF for the period under consideration.

If we assume an interest rate of 10 percent, we can compute the lease cost as shown in Table 6. Here the lease cost after tax is simply the lease cost multiplied by 1 minus the firm's marginal tax rate. The marginal tax rate is 0.5, which means that the lease cost after tax is one-half the lease payment. As Table 6 depicts, after considering the tax deductibility of leasing and the present value of future payments, we get \$1,192 for the three-year present value of the cost of leasing. Note that the maintenance cost included in a lease is a separate chargeable item when equipment is purchased. For comparison, assume that the purchase price of the multiplexer is \$2,400 and a three-year maintenance contract costs \$240 per year. A zero salvage value is assigned to the multiplexer, and straight-line depreciation will be used for tax purposes. Table 7 shows tabulations for the applicable cost of ownership. The company's total tax deductions each year are multiplied by its marginal tax rate to obtain the yearly tax savings. This figure is then multiplied by the

Taxing phrases

Accelerated depreciation. A catchall term that describes accounting methods allowing deductions during the estimated *useful* life of equipment, as opposed to its pure physical life.

Accrual. Recognition on the books of incurring expenses (in contrast to prepaid). An accruing item on the books might be the monthly payments toward the eventual purchase of leased equipment.

Declining balance. A depreciation method that applies a fixed percentage to the original cost of a piece of equipment and to the following balances. Say, a multiplexer originally costs \$100, constant depreciation is 10 percent, balance is \$90; the following year, 10 percent is applied against the \$90 with the new balance becoming \$81, and so on, until the balance is absorbed.

Salvage value. The estimated scrap value of, say, a terminal at the end of its useful life. It is usually gauged when the equipment is new.

Straight-line depreciation. An almost universal expense computation based on the assumption that a modem, for instance, has a limited useful life. In this basic method, the cost is viewed as a prepaid expense spread over the modem's operating life, less its salvage value.

Sum of the years' digits. A declining-balance variant for determining the annual depreciation percentage. It is derived from placing the estimated useful life as the numerator and the declining sum of those years as the denominator.

appropriate present value interest factor, producing the present value of taxes saved by depreciation, known as cash inflows, that have resulted from ownership. The savings from the investment tax credit is added, and this new sum is subtracted from the purchase price to obtain the net cost of ownership. Based on this example, ownership is more favorable. ■

Table 7 Cost of ownership

YEAR	DEPRECIATION	MAINTENANCE	TOTAL TAX DEDUCTIONS	TAX SAVINGS [(1 - .5) x TAX DEDUCTIONS]	10% PRESENT VALUE INTEREST FACTOR	PRESENT VALUE OF CASH INFLOWS
1	\$800	\$240	\$1,040	\$520	.909	\$473
2	800	240	1,040	520	.826	430
3	800	240	1,040	520	.751	391
						SUBTOTAL..... \$1,294
						INVESTMENT TAX CREDIT
						\$2,400 x 3.33%
						80
						TOTAL CASH INFLOWS.....
						\$1,374
						ADJUSTED EQUIPMENT COST
						PURCHASE PRICE.....
						\$2,400
						LESS CASH INFLOWS.....
						1,374
						NET COST.....
						\$1,026

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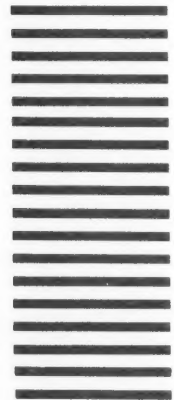
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Tokyo 103
Marubun Corp
1-1 Nihombashi Odemmacho,
2-Chome, Chuo-Ku
03/662-8151

NETHERLANDS

Zeist
Datacare BV
2925 Laan Van Vollenhove
03/40 42 1344

NEW ZEALAND

Auckland
David Reid Data Products Ltd
17 Huron St, Takapuna
499 197

PHILIPPINES

Metro Manila
Decision Systems Corp
150 Amorsolo St, Legaspi
Village; Makati
89-10-96 to 98

SPAIN

Madrid 5
Aupoca SA
Bernardino Obregon 26

SWEDEN

S-12348 Farsta 1
Tel Inter AB
Forslagagatan 58
08/94 04 90

SWITZERLAND

9500 Wil
Datacare AG
Untere Bahnhofstrasse 19
073/22 05 92

ACRO CORPORATION

18003-L Sky Park South
Irvine, CA 92714
714-557-5118
Contact: Sonny Burkett
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Disc drives, floppy
Data entry terminals
Interactive terminals
Remote line printers
Video data terminals (KSR)

Branch Sales Offices:

NJ Cherry Hill
ACRO Corporation
26 W High Ridge Rd
609-424-0704

ACTION COMMUNICATION SYSTEMS INC

4401 Beltwood Parkway South
Dallas, TX 75234
214-386-3500
Contact: Chuck Hamilton
■ Products & Services
Message switchers
Switches, data communications, automatic

Branch Sales Offices:

CA Costa Mesa
Action Comm Systems
3183 E Airway
714-957-6161

CA San Francisco
Action Comm Systems
311 California
415-956-5858

GA Marietta
Action Comm Systems
2053 Paran Ct
404-973-2023

IL Des Plaines
Action Comm Systems
2340 River Rd S
312-694-2320

MI Livonia
Action Comm Systems
15855 Farmington Rd
313-261-6025

NJ Upper Saddle River
Action Comm Systems
Box 700
201-825-9518

NY New York
Action Comm Systems
666 Third Ave
212-972-9431

PA Pittsburgh
Action Comm Systems
12 St. Williams Pl
412-931-9290

TX Portland
Action Comm Systems
233 Terlingua
512-643-4327

ADAGE INC

One Fortune Drive
Billerica, MA 01821
617-667-7070
Contact: Ray Barger
■ Products & Services
Graphic display terminals
Programmable terminals
Interactive terminals

Branch Sales Offices:

CA Escondido
Adage Inc
333 South Juniper
714-743-8444

CO Englewood
Adage Inc
5680 S Syracuse Cr
303-779-6194

IL Schaumburg
Adage Inc
957 North Plum Grove Rd
312-843-7566

MI Southfield
Adage Inc
24423 Southfield Rd
313-559-2620

MO St Louis
Adage Inc
1034 S Brentwood Blvd
314-863-4800

NY Wantagh
Adage Inc
3375 Park Ave
516-781-5800

OH Cincinnati
Adage Inc
4030 Mount Carmel-Tobasco Rd
513-528-2770

TX Dallas
Adage Inc
12900 Preston Rd
214-387-0972

WA Everett
Adage Inc
7600 Evergreen Way
206-347-3978

GERMANY, WEST

3308 Koenigsutter am Eim
Adage
Marktstrasse 9

For further catalog information, turn to
Update Service Card, page 201.

A D C MAGNETICS CONTROLS CO

4900 W 78 St
Bloomington, MN 55435
612-835-6800
Contact: James Brandt
■ Products & Services
Electrical-parameters test equipment
Network management centers

Technical control centers
Cables, electrical prefabricated extending
Data jacks and plugs
Power supplies
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

CO Pine
ADC
Route 2 Box 405A
303-761-4061

CT Fairfield
ADC
1735 Post Rd
203-255-0644

GA Atlanta
ADC
777 Cleveland Av
404-766-9595

MN Minneapolis
ADC
4900 W 78 St
612-835-6800

TX Richardson
ADC
1200 Executive Dr E
214-699-1115

QUEBEC, CANADA
Longueuil
ADC
26 De Gentilly West
514-677-2869

ADDMASTER CORP

416 Junipero Serra Dr
San Gabriel, CA 91776
213-285-1121
Contact: Louis Doshay
■ Products & Services
Tape, paper
Tape punch/reader, paper

Branch Sales Offices:

CA Los Altos
Systems Marketing Consultants
Box 1376
415-941-7122

IL Chicago
Scientific Sales
7257 W Touhy St
312-775-7595

NJ Ridgewood
Instrumentation Sales
171 E Ridgewood Ave
201-445-5210

ADVANCED ELECTRONICS DESIGN INC

440 Potrero Av
Sunnyvale, CA 94086
408-733-3555
Contact: Jerry Kennedy

■ Products & Services
Disc drives, floppy
Disc drives, large
Graphic display terminals
Computer/communications interfaces
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

CA Tarzana
Advanced Electronics Design
18730 Oxnard St
213-705-0379

MA Bedford
Advanced Electronics Design
128 Great Rd
617-275-6400

AGILE CORP
1050 Stewart Dr
Sunnyvale, CA 94086
408-735-9904
Contact: John Rademaker
■ Products & Services
Acoustic couplers
Interactive terminals
Teleprinters, impact
Terminal controllers
Terminal interfaces
Word processors, communicating
Computer/communications interfaces

Branch Sales Offices:

AL Birmingham
Midsouth Data Industries
2600 Creekview Dr
205-979-4300

CA Sunnyvale
Agile Corp
1050 Stewart Dr
408-735-9904

IL Chicago
Agile Corp
840 W Altgeld
312-929-3318

MA Needham
Information Technology
56 Kearney Rd
617-444-5702

MI Livonia
Alpha Computer
27503 School Craft
313-261-5830

MN Burnsville
Minnetek
12006 Riverwood Dr
612-894-3530

MO St Johns
Midwest Marketing
3606 Woodson Rd
314-426-2500

OK Oklahoma City
Oklahoma Systems
121 NW 23rd St
405-528-7851

VA Annandale
Terminals Unltd Inc
Box 1002
703-525-6309

ENGLAND
Maidenhead; Berks
Inter Sales Group
50/52 Moorbridge
628-36828

AIR LAND SYSTEMS CORP

2820 Dorr Ave
Fairfax, VA 22031
703-573-1100
Contact: William C Axe
■ Products & Services
Terminal controllers
Computer/communications interfaces
Protocol converters

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

ALANTHUS DATA COMMUNICATIONS CORP

6011 Executive Blvd
Rockville, MD 20852
301-770-1150
Advertising page 32B
Contact: Arthur D Gallo
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
DDP systems
Cassette drives
Disc drives, floppy
Programmable terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Compton
Alanthus Data Comm Corp
2210 Gladwich St
213-537-6830

CA San Francisco
Alanthus Data Comm Corp
501 Forbes Blvd
415-952-6300

IL Bensenville
Alanthus Data Comm Corp
1054 N Tower Ln
312-860-2233

MA Waltham
Alanthus Data Comm Corp
393 Totten Pond Rd
617-890-0226

MI Troy
Alanthus Data Comm Corp
598 Oliver St
313-362-1686

NY New York
Alanthus Data Comm Corp
545 Madison Ave
212-688-2615

PA Pittsburgh
Alanthus Data Comm Corp
One Parkway Center
412-922-8483

TX Dallas
Alanthus Data Comm Corp
2636 Walnut Hill La
214-358-4151

TX Houston
Alanthus Data Comm Corp
4930-C Daconia St
713-683-7834

VA McLean
Alanthus Data Comm Corp
7926 Jones Branch Dr
301-770-1150

ALDEN ELECTRONIC & IMPULSE RECORDING EQUIPMENT CO INC

Washington St
Westboro, MA 01581
617-366-8851
Contact: Lawrence A Farrington
■ Products & Services
Acoustic couplers
Facsimile terminals
Graphic display terminals

Branch Sales Offices:

MA Brockton
Alden Intl
117 N Main St
617-583-0160

VA Alexandria
Alden Electronic Washington Lab
& Service Facility
618 N Washington St
703-549-5199

ALLTECH PUBLISHING CO

212 Cooper Center; N Park Dr &
Browning Rd
Pennsauken, NJ 08109
609-662-2122
Contact: Emily J Rieker
■ Products & Services
Data communications consultants
Educational services

AM BRUNING MICROGRAPHICS

2871 Walnut Ave
Tustin, CA 92680
714-544-9800
Contact: W Baker
■ Products & Services
Microfilm equipment, systems and services

Branch Sales Offices:

AL Birmingham
AM Bruning
124 Shader Rd
205-942-2300

AZ Phoenix
AM Bruning
2222 W Encanto Blvd
602-257-8334

CA Los Angeles
AM Bruning
3020 Wilshire Blvd
213-381-3331

CO Denver
AM Bruning
Box 17689
303-773-3500

CT Hartford
AM Bruning
631 Farmington Ave
203-236-6131

FL Miami
AM Bruning
Box 520943
305-592-3330

GA Norcross
AM Bruning
6443 Warren Dr
404-448-9750

IL Chicago
AM Bruning
443 N Wabash Ave
312-527-2025

KS Wichita
AM Bruning
940 N Waco Ave
316-267-7347

KY Louisville
AM Bruning
Box 99624
502-491-5450

LA Baton Rouge
AM Bruning
10466 Airline Hwy
504-293-0411

MD Baltimore
AM Bruning
6665 Security Blvd
301-944-9200

- MA Needham
AM Bruning
64 A St
716-883-6320
- MO Kansas City
AM Bruning
2546 Broadway
816-221-8520
- NE Omaha
AM Bruning
3316 Dodge St
402-341-9300
- NY New York
AM Bruning
Five World Trade Ctr
212-432-3100
- OH Cincinnati
AM Bruning
1871 Summit Rd
513-761-9100
- OK Oklahoma City
AM Bruning
4000 N Lincoln Blvd
405-427-5481
- PA Bala Cynwyd
AM Bruning
9 Presidential Blvd
215-839-0400
- TN Memphis
AM Bruning
Box 150
901-527-8331
- TX Dallas
AM Bruning
14228 Midway Rd
214-233-9200
- UT Salt Lake City
AM Bruning
Box 1348
801-521-2992
- VA Richmond
AM Bruning
4301 W Broad St
804-353-0111
- VA Roanoke
AM Bruning
5338 Peters Creek Rd
703-366-3030
- WA Seattle
AM Bruning
5901 Fourth Ave So
206-763-9500
- ONTARIO, CANADA
Toronto
AM Bruning
165 Milner Ave
416-298-2700
- AUSTRALIA
Victoria
AM Intn'l Pty Ltd
636-666 Wellington Rd
416-298-2700
- BELGIUM
Brussels
AM Intn'l SA
18 Rue des Chevaliers
32-2-511-1890
- DENMARK
Copenhagen
AM Intn'l A/S
2500 Valby
45-1-30-3399
- ENGLAND
Hertfordshire
AM Intn'l Info Systems Ltd
Maylands Avenue
44-442-42251
- FRANCE
Courbevoie Cedex
AM Intn'l SA
BP 307, 60, Rue Berthelot
33-1-334-3121
- GERMANY, WEST
Frankfurt
AM Intn'l Gmbh
Postfach 102008
49-6103-3011
- JAPAN
Tokyo
AM Japan Co Ltd
Mandai Bldg-No 4, Kojimachi
4;Chrome, Chiyoda-ku
81-3-230-4611
- MEXICO
Mexico
AM Intn'l SA de CV
Apdo, Postal No 30-6333
905-566-1422
- NETHERLANDS
Rijswijk
AM Intn'l BV
Box 130
31-70-90-6650
- AMCO ENGINEERING CO
3801 N Rose St
Schiller Pk, IL 60176
312-671-6670
Contact: Floyd Johnson
■ Products & Services
Furniture, cabinets, terminal enclosures
Branch Sales Offices:
- AL Huntsville
Kemp Instruments
4306 Governors Dr W
205-837-4304
- AZ Little Rock
Kemp Engineering
1400 Old Forge
501-224-0958
- AZ Phoenix
Grammer & Company
Box 35336
602-995-9455
- CA Los Angeles
The Knight Company
6733 S Sepulveda Blvd
213-670-2833
- CA Orange County
The Knight Company
714-833-8250
- CA San Diego
The Knight Company
10832 Worthing Ave
714-271-7817
- CA Burlingame
Polach & Bensinger
1838 El Camino Real
415-697-2525
- CO Boulder
R G Enterprises
1898 S Flatiron Ct
303-447-9211
- CT Stratford
Instrument Dynamics
Marina Bldg
203-378-6019
- FL Clearwater
WMM Associates
50 S Belcher
813-442-3913
- FL Ft Lauderdale
WMM Associates
1021 NE 4th St
305-772-9850
- FL Altamonte Springs
WMM Associates
475 Maitland Ave
305-831-4530
- GA Atlanta
Kemp Instruments
5725 Buford Hiway NE
404-452-8050
- IL Schiller Park
R L Lang & Associates
3801 N Rose St
312-671-3228
- IN Ft Wayne
McDonald Sales Co
Box 9189
219-747-3650
- IA Davenport
Ensco-Rep Inc
2615 W Central
319-386-6600
- KS Overland Park
Ensco-Rep Inc
7939 Floyd
913-381-7557
- LA Lafayette
Kemp Engineering
137 Pembroke Ln
318-984-3516
- MD Silver Spring
L G White & Co
1751 Elton Rd
301-434-1555
- MA Wakefield
Instrument Dynamics
Box 584
617-245-5100
- MI Madison Heights
WKM Associates
345 Girard
313-588-2300
- MN St Paul
Bonament Heyda Co
3830 Rustic Pl
612-484-8531
- MO St Louis
Ensco-Rep Inc
11714 Lackland Ind Dr
314-567-3935
- NJ Mahwah
International Sales Div
Box 338
201-825-0473
- NM Albuquerque
C T Carlberg Associates
Box 3177
505-265-1579
- NY Glen Cove
F & F Associates
Box 408
516-671-8900
- NY Syracuse
Naco Electronics
Box 276
315-699-2651
- NC Winston Salem
L G White & Co
Box 2356
919-725-3612
- OH Cleveland
WKM Associates
16141 Puritas Ave
216-267-0445
- OH Dayton
WKM Associates
7913 S Suburban Rd
513-434-7500
- OK Tulsa
Don Shuhart Company
2241 E Skelly Dr
918-747-4136

OR Beaverton
Barrett/Squibb & Assoc
4480 SW Hall
503-644-2550

PA Broomall
White/Whiddett Co
630 Parkway
215-353-6347

PA Pittsburg
WKM Associates
90 Clairton Blvd
412-892-2953

SC Greenville
L G White & Co
Box 5531 Station B
803-271-0630

TX Dallas
Don Shuhart Company
12011 Coit Rd
214-239-0185

TX El Paso
C T Carlberg & Assoc
Box 4752
505-824-4992

TX Houston
Kemp Engineering Co
4540 West 34th St
713-688-1431

VA Richmond
L G White & Co
Box 29081
804-740-7093

WA Redmond
Barrett/Squibb & Assoc
17090 Avondale Way NE
206-885-6991

BRITISH COLUMBIA, CANADA
Vancouver
National Electrolab
1536 Columbia
604-985-0511

AMDAX CORP
160 Wilbur Pl
Bohemia, NY 11716
516-567-7887
Contact: P Ullrich
■ Products & Services
Modems, limited distance
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)

Branch Sales Offices:

CA Santa Clara
Engineered Comm & Services
3350 Victor Ct
408-988-7681

CO Englewood
Barnhill Three Inc
7076 S Alton Wy
303-779-3600

NM Albuquerque
Barnhill Three Inc
1410-D Wyoming NE
505-299-7658

AMERICAN LASER SYSTEMS INC
106 Fowler Rd; Santa Barbara Airport
Goleta, CA 93017
805-967-0423
Contact: Lorraine Shallenberger
■ Products & Services
Infrared systems

Branch Sales Offices:

CA San Diego
DRF Assoc Inc
3408 Mt Ariane
714-292-9431

AMERICAN MICROSYSTEMS INC
3800 Homestead Rd.
Santa Clara, CA 95051
408-246-0330
Contact: Claudia Willrodt
■ Products & Services
Automatic calling units
Computer/communications interfaces
Data security devices, encoder/decoders
Voice digitizers

Branch Sales Offices:

CA Santa Clara
AMI Field Sales
2960 Gordon Ave
408-738-4151

IL Elk Grove Village
AMI Field Sales
500 Higgins Rd
312-437-6496

NY Monsey
AMI Field Sales
20F Robert Pitt Dr
914-352-5333

AMERICAN SATELLITE COMPANY
20301 Century Blvd
Germantown, MD 20767
301-428-6040
Contact: H R Johnson
■ Products & Services
Facsimile-service carriers
Message (including telegraph) carriers
Satellite carriers
Specialized carriers
Front-end processors
Digital service units
Digitized-voice processors
Earth stations
Network management centers
DDP systems
Programmable terminals
Computer/communications interfaces
Data security devices, encoder/decoders
Satellite delay compensation units

Branch Sales Offices:

CA Los Angeles
Marketing Office
9800 S Sepulveda
213-641-7570

CA San Francisco
Marketing Office
50 California St
415-986-1288

IL Chicago
Marketing Office
625 N Michigan Ave
312-266-1766

NY New York
Marketing Office
5 World Trade Ctr
212-775-1234

TX Houston
Marketing Office
530 N Belt E
713-445-5865

AMERICAN TERMINAL LEASING CO
Box 68 Kenmore Sta
Boston, MA 02215
617-261-2700
Contact: Sales Department
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Batch terminals
Programmable terminals
Teleprinters, impact
Teletypewriters

Video data terminals (KSR)
Lease and resale organizations

AMERICAN USED COMPUTER CO
712 Beacon St
Boston, MA 02215
617-261-1100
■ Products & Services
Concentrators
Message switchers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Multiplexers, group band
Remote network processors
Acoustic couplers
Digital service units
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)

Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Bar code readers
Batch terminals
Graphic display terminals
Programmable terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Data access arrangement devices
Switches, data communications, automatic
Switches, data communications, manual
Lease and resale organizations
Used equipment

AMES COLOR FILE
12 Park St
Somerville, MA 02143
617-776-1142
Contact: Fred Booth
■ Products & Services
Concentrators
Bar code readers

Branch Sales Offices:

CA Lafayette
Access Systems
3717 Mt Diablo Blvd
415-283-0286

CA Long Beach
Ames Color File
2667 E 28th St
213-424-1601

DC Washington
Ames Color File
1629 K St
202-223-0839

GA Atlanta
Ames Color File
5825 Glenridge Dr
404-256-0344

IL Chicago
Ames Color File
188 Industrial Dr
312-279-9474

IN Indianapolis
Ames Color File
Box 570
317-392-1947

MA Boston
Ames Color File
12 Park St
617-776-1142

MI Detroit
Ames Color File
324 N Main St
313-227-4095

MS Jackson
Ames Color File
Box 5615
601-825-8340

MO St Louis
Ames Color File
3008 Pershall Rd
314-521-8322

NY Yonkers
Ames Color File
984 North Broadway
914-423-2300

NY Rochester
Ames Color File
300 White Spruce Blvd
716-442-0550

OH Cleveland
Ames Color File
Hanna Building
216-696-7060

PA Philadelphia
Ames Color File
237 Lancaster Ave
215-293-1510

PA Pittsburgh
Ames Color File
Box 172
412-687-6161

TX Dallas
Ames Color File
12100 Ford Road
214-387-4828

TX Houston
Ames Color File
8401 Westheimer
713-780-7618

VA Virginia Beach
Ames Color File
2123 Mystic Cove Dr
804-464-2379

For further catalog information, turn to
Update Service Card, page 201.

AM JACQUARD SYSTEMS
3340 Ocean Pk Blvd
Santa Monica, CA 90405
213-450-1242
■ Products & Services
Front-end processors
Minicomputers
DDP systems
Cartridges
Cartridge drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Electronic mailboxes
Tape drives, magnetic
Batch terminals
Programmable terminals
Remote job entry terminals
Teleprinters, impact

Video data terminals (KSR)
Word processors, communicating
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Educational services
Lease and resale organizations
Maintenance organizations
Branch Sales Offices:
CO Denver
AM Jacquard Systems
7300-C S Alton Wy
303-773-2909
GA Atlanta
AM Jacquard Systems
1835 Savoy Dr NE
404-455-0155
MO St Louis
AM Jacquard Systems
5240 Oakland Ave
314-534-5017
NJ Florham Park
AM International
201-966-1136

AMPEX CORP
MEMORY PRODUCTS DIV
200 N Nash St
El Segundo, CA 90245
213-640-0150
Contact: John Jory
■ Products & Services
Add-on main memory
Cartridge drives
Disc drives, large
Tape drives, magnetic
Programmable terminals
Terminal controllers
Terminal interfaces

Branch Sales Offices:

CA Santa Ana
Ampex
1570 E 17
714-973-2970
CA Cupertino
Ampex
10435 N Tantau Ave
408-255-4800
FL Coral Springs
Ampex
8316 NW 20 St
305-753-7158
FL Pompano Beach
Ampex
1620 S Federal Hwy
305-785-6400
GA Atlanta
Ampex
3135 Chestnut Dr
404-451-7112
IL Elk Grove Village
Ampex
2201 Lunt Ave
312-593-6000
MD Bethesda
Ampex
10215 Fernwood
301-530-8800
MA Waltham
Ampex
391 Totten Pond Rd
617-890-2040
NJ Hackensack
Ampex
75 Commerce Way
201-489-7400
TX Houston
Ampex
6430 Hillcroft
713-774-8714

TX Dallas
Ampex
1615 Prudential Dr
214-637-5100

ANADIX INC
9825 DeSoto Ave
Chatsworth, CA 91311
213-998-8010
Contact: K A Mathews
■ Products & Services
Remote line printers
Teleprinters, impact

ANALOG DEVICES
Route 1 Industrial Pk
Norwood, MA 02062
617-329-4700
Contact: Keith Rutherford
■ Products & Services
Power supplies

Branch Sales Offices:

CA Huntington Beach
Analog Devices Inc
7271 Mars Dr
714-842-1717
IL Bloomingdale
Analog Devices Inc
123 E Lake St
312-894-3300
MA Norwood
Analog Devices Inc
Box 280
617-329-4700
TX Richardson
Analog Devices Inc
777 S Central Expwy
214-231-5094

ANALYTICAL CHEM LABS

1960 E Devon Ave
Elk Grove Village, IL 60007
312-981-9212
Contact: S A Halperin
■ Products & Services
Ribbons and supplies for terminals and
printers
Branch Sales Offices:
CA San Jose
Sharon Kaminskis
408-259-5043

ANDERSON JACOBSON

521 Charcot Ave
San Jose, CA 95131
408-263-8520
Contact: Tom Zmach
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Disc drives, floppy
Discs, floppy
Electronic mailboxes
Floppy disc recorders
Batch terminals
Data entry terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters

Video data terminals (KSR)
Word processors, communicating
Automatic answering units
Data compression devices
Paper for terminals
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

AL Homewood
Anderson Jacobson
232 Oxmoor Cir
205-942-2625

CA San Jose
Anderson Jacobson
2065 Junction Ave
408-946-2900

CA Carson
Anderson Jacobson
221 Selandia La
213-538-4170

CA San Diego
Anderson Jacobson
3435 Camino Del Rio S
714-233-7050

CA San Francisco
Anderson Jacobson
185 Berry St
415-495-4633

CO Aurora
Anderson Jacobson
5 Parker Place
303-750-4224

CT E Hartford
Anderson Jacobson Inc
135 Burnside Ave
203-289-9591

GA Norcross
Anderson Jacobson
6689 Peachtree Indst Blvd
404-448-1520

IL Rosemont
Anderson Jacobson
5515 Milton Pkwy
312-671-7155

IN Indianapolis
Anderson Jacobson
2070 E 54th St
317-253-0246

IN Jeffersonville
Anderson Jacobson
1028 Watt St
812-283-6706

MI Oak Park
Anderson Jacobson
14630 W Eight Mile Rd
313-967-1414

MN Spring Lake
Anderson Jacobson
1633 Highway 10 NE
612-784-5045

MO Kansas City
Anderson Jacobson
3600 Broadway
816-531-2906

NJ Hackensack
Anderson Jacobson
80 Frederick St
201-488-2525

NY New York
Anderson Jacobson
1 Pennsylvania Plaza; Suite 2430
212-594-9630

OH Cincinnati
Anderson Jacobson
10810 Millington Ct
513-793-6900

OH Akron
Anderson Jacobson
871 Moe Dr
216-633-0203

OH Columbus
Anderson Jacobson
4555-8 Groves Rd
614-868-0333

OH Middleburg Hts
Anderson Jacobson
6908 Engle Rd
216-234-3450

OH Dayton
Anderson Jacobson
Box #5
513-229-5055

PA Sharpsburgh
Anderson Jacobson
1045 N Canal St
412-781-1167

PA Norristown
Anderson Jacobson
720 E Johnson Hwy
215-277-7074

TX Dallas
Anderson Jacobson
1625 Mockingbird Ln
214-631-3594

TX Houston
Anderson Jacobson
2400 Central Parkway
713-771-1342

WA Tukwila
Anderson Jacobson
944 Industry Dr
206-575-8024

WI West Allis
Anderson Jacobson
6104 W Lincoln Ave
414-327-2370

ONTARIO, CANADA
Ottawa
Anderson Jacobson
50 Colonnade Rd
613-226-2551

FRANCE
Paris
Anderson Jacobson, S A
14 rue Leon Gambetta; 92120
Montrouge
654-1000

ANN ARBOR TERMINALS

6175 Jackson Rd
Ann Arbor, MI 48103
313-663-8000
Contact: Kitty Straith
■ Products & Services
Batch terminals
Data entry terminals
Graphic display terminals
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Canoga Park
Chandler Assoc
7032 Owensmouth Ave
213-340-6103

CA Los Altos
Chandler Assoc
One First St
415-941-1887

CT Litchfield
Digital Sales Assoc
West St
203-567-9776

FL Satellite Beach
Reynolds & Associates
476 N A1A
305-773-4700

FL Ft Lauderdale
Reynolds & Associates
161 SW 75th Ave
305-581-6611

FL St Petersburg
Reynolds & Associates
11405 8th St East
813-360-1484

GA Atlanta
Reynolds & Associates
5057 Vernon Springs Dr
404-393-9113

MD Rockville
Electronic Marketing Assoc
11716 Parklawn Dr
301-774-7700

MA Waltham
Digital Sales Assoc
9 Spring St
617-899-4300

MO Grandview
Digital Sys Sls
4006 East 137th Ter
816-765-3337

NY Great Neck
Harvey J Krasner Associates
87 Water Mill La
516-487-0690

NC Winston-Salem
Reynolds & Associates
614 First Union Bldg
919-725-6196

OK Oklahoma City
Data Marketing Associates
2401 NW 39 Expressway
405-528-6071

PA Plymouth Meeting
Electronic Marketing Assoc
649 W Germantown Pike
215-828-7400

RI Portland
Hood Engineering
9985 NW Ash
503-292-2118

TX Dallas
Data Marketing Associates
14235 Proton Road
214-661-0300

TX Houston
Data Marketing Associates
3330 Bering Dirvie
713-780-2511

TX San Antonio
Data Marketing Associates
Box 17928
512-342-3031

TX Austin
Data Marketing Associates
300 E Huntland Drive
512-451-5174

WA Bellevue
Hood Eng
12835 Bellevue-Redmond
206-453-9375

BRITISH COLUMBIA, CANADA
W Vancouver
Tracan Electronics Western Ltd
1144 Millstream Rd
604-926-3411

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

THE ANSUL CO/WORMALD INTL GRP
1 Stanton St
Marinette, WI 54143
715-735-7411
Contact: Terry G Mylener

■ Products & Services
Fire detection/protection equipment

APPLE COMPUTERS

10260 Bandle Dr
Cupertino, CA 95014
408-996-1010

APPLICATIONS SOFTWARE INC

21515 Hawthorne Blvd
Torrance, CA 90503
213-540-0111
Contact: Donald H Sundeen
■ Products & Services
Data communications software, independent
software houses

Branch Sales Offices:

CT Farmington
Applications Software Inc
270 Farmington Ave
203-677-1871

MO St Charles
Applications Software Inc
Box 943
314-946-4505

APPLIED DATA COMMUNICATIONS

14272 Chambers Rd
Tustin, CA 92680
714-731-9000
Contact: John Slumppf
■ Products & Services
EIA cable testers
Protocol analyzers
Disc drives, floppy
Computer/communications interfaces
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA Tustin
ADC
14272 Chambers Rd
714-731-9000

MA Burlington
ADC
50 Mall Rd
617-273-4844

APPLIED DELTA SYSTEMS INC

101 Kor Center E
Bellmawr, NJ 08031
609-931-3100
Contact: H Kendall Felix
■ Products & Services
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Port selectors
Port sharing units
Acoustic couplers
Line drivers
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modem eliminators
MIL 188C adapters
Protocol analyzers
Response-time monitors
Network management centers
Technical control centers
Point of sale terminals
Automatic answering units
Automatic calling units
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment

Switches, data communications, automatic
Switches, data communications, manual
Voice adapters

Branch Sales Offices:

PA Pittsburgh
Applied Delta Systems
16 E West Dr
412-931-1960

APPLIED DIGITAL DATA SYSTEMS INC

100 Marcus Blvd
Hauppauge, NY 11787
516-231-5400
Contact: Frank Zelis
■ Products & Services
DDP systems
Batch terminals
Programmable terminals
Interactive terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AZ Phoenix
Applied Digital Data Systems Inc
4621 N 16 St
602-265-3264

CA Newport Beach
Applied Digital Data Systems Inc
4030 Birch St
714-752-6700

CA Palo Alto
Applied Digital Data Systems Inc
2275 East Bayshore Rd
415-856-0560

CA San Diego
Applied Digital Data Systems Inc
3443 Camino Del Rio S
714-280-9341

CO Denver
Applied Digital Data Systems Inc
3333 Quebec St, Bldg B
303-756-3663

FL Hollywood
Applied Digital Data Systems Inc
2741 N 29 Ave
305-920-2337

GA Atlanta
Applied Digital Data Systems Inc
4380 Georgetown Sq
404-455-9341

IL Schaumburg
Applied Digital Data Systems Inc
1325 Remington Rd
312-843-7555

MA Chestnut Hill
Applied Digital Data Systems Inc
850 Boylston St
617-739-4857

MI Southfield
Applied Digital Data Systems Inc
21800 W 10 Mile Rd
313-358-0950

MO St Louis
Applied Digital Data Systems Inc
130 S Bemiston Ave
314-863-7444

NJ Sea Bright
Applied Digital Data Systems Inc
16 Village Rd
201-747-2337

NY Hauppauge
Applied Digital Data Systems Inc
100 Marcus Blvd
516-231-5400

OH Columbus
Applied Digital Data Systems Inc
4663 Executive Dr
614-459-4270

PA Pittsburgh
Applied Digital Data Systems Inc
875 Greentree Rd
412-922-1244

TX Houston
Applied Digital Data Systems Inc
5151 Mitchell Dale
713-680-2332

TX Dallas
Applied Digital Data Systems Inc
13610 Midway Rd
214-387-2337

UT Draper
Applied Digital Data Systems Inc
12953 S State St
801-571-3980

VA McLean
Applied Digital Data Systems Inc
7921 Jones Branch Dr
703-734-9445

WA Kent
Applied Digital Data Systems Inc
19613 81 Ave S
206-852-8611

ENGLAND

New Malden, Surrey
Applied Digital Data Systems Inc
137-141 High St
01-949-1272

APPLIED SYSTEMS CORP

26401 Harper Ave
St Claire Shores, MI 48081
313-779-8700
Contact: Marty Wyrod
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, statistical (intelligent)
Remote network processors
DDP systems
Add-on main memory
Cartridge drives
Disc drives, floppy
Tape drives, magnetic
Batch terminals
Graphic display terminals
Programmable terminals
Portable data entry terminals
Remote line printers
Teleprinters, impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Code converters
Computer/communications interfaces
Data compression devices
Data security devices, encoder/decoders
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

CA Encino
King Engr Co
17333 Rancho St
213-981-8677

OH Cleveland
CSA Sales Co
20278 Westhaven
216-333-2088

ARK ELECTRONIC PRODUCTS

325 W Hibiscus Blvd
Melbourne, FL 32901
305-724-5260

Advertising page 68

Contact: Mervin W Wilson

■ Products & Services

Modem sharing units
Multiplexers, frequency division
Modems, limited distance
Modem eliminators
Computer/communications interfaces
Error controllers
Protocol converters

ARTELONICS CORP

2952 Bunker Hill Ln
Santa Clara, CA 95050
408-727-3071

Contact: Gordon Kraft

■ Products & Services

Remote network processors
DDP systems
Local network systems
Programmable terminals
Word processors, communicating

ASI TELEPROCESSING

101 Morse St
Watertown, MA 02172
617-923-1850

Contact: Edward Rivnerider

■ Products & Services

Front-end processors
Packet processors
Remote network processors
Local network systems
Audio response units

Branch Sales Offices:

GA Marietta
ASI Teleprocessing
3566 Liberty Ridge Trail
404-977-7707

MA Watertown
ASI Teleprocessing
101 Morse St
617-923-1850

NY New York
ASI Teleprocessing
516 5th Ave
212-354-8575

ASPEN RIBBONS

1700 N 55th St
Boulder, CO 80301
800-525-0646

Contact: Peter C Williams

■ Products & Services

Ribbons and supplies for terminals and printers

ASSOCIATED COMPUTER CONSULTANTS

228 E Cota St
Santa Barbara, CA 93101
805-963-8801

Contact: Sheldon L Hess

■ Products & Services

Front-end processors
Minicomputers
Packet processors
Remote network processors
Local network systems
Computer/communications interfaces
Protocol converters
Data communications consultants
Data communications software,
communications processors vendors

Branch Sales Offices:

CA Woodland Hills
Gordon Osborne & Assoc
23040 Cumorah Crest Dr
213-888-9916

MD Columbia
Ron Stoughton
Teachers Building
301-997-9373

DENMARK

2610 Rodovre
Datalog A/S
Roskildevej 398
01-41-51-33

FRANCE

Penthievre Sceaux
Richard Stammers
2 Allee des Pins
702.99.30

ITALY

20146 Milano
Elettronucleonica SpA
Piazza De Angeli 7
49.82.451

Want to receive announcements of new products?

Turn to **UpDate Service Card, page 201.**

ASTROCOM CORP

120 W Plato Blvd
St Paul, MN 55107
612-227-8651

Advertising pages 66,86

Contact: Thomas H Frahm

■ Products & Services

Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modem eliminators
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Data access arrangement devices

Branch Sales Offices:

CA San Diego
Western Scientific
5402 Ruffin Rd
714-565-6699

CA Carson
Western Scientific
22101 S Wilmington Ave
213-549-6981

CO Denver
Data Systems Mktg
955 Bannock
303-573-5133

CT Southbury
J J Wild Inc
Box 342
203-264-9494

FL Orlando
Technical Assoc
Box 20693
305-894-7531

HI Honolulu
Aloha Assoc
1919 Hunnewell St
808-941-1574

IL Bloomingdale
Scientific Devices
255 E Lake St
312-894-5470

MD Gaithersburg
Wright Mktg Co
19104 Rhodes Way
301-840-1928

MA Needham
J J Wild Inc
163 Reservoir St
617-444-2366

MN Minneapolis
Computer Equip & Supplies
7328 Ohms La
612-831-6610

MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742

NJ Fort Lee
Hansen & Hughes Co
2175 Lemoine Ave
201-944-1600

PA King of Prussia
J E Cuesta & Co
Dekalb Pk
215-265-5800

TX Houston
Data Aids Assoc
1440 North Loop
713-862-6685

TX Dallas
Data Aids Inc
2880 LBJ Frwy
214-620-1551

ONTARIO, CANADA
Ottawa
Louis Albert Assoc Inc
2264 Stevenage Dr
613-737-5941

AUSTRALIA
Crows Nest NSW
Datamatic
90 Alexander St
43-3333

ENGLAND
Princes Risborough; Bucks
Data & Control Equipment LTD
Poppy Rd
08-444-3281

GERMANY, WEST
Feldbergstrabe
Telemation GMBH & Co
6 Frankfurt/Main 1
06-11-723418

AT&T
225 Littleton Rd; Room 2F07
Morris Plains, NJ 07950
201-631-1176

■ Products & Services
Telephone companies
Digital service units
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Disc drives, floppy
Discs, floppy
Batch terminals
Data entry terminals
Interactive terminals
Remote line printers

Teleprinters
Teleprinters, impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Automatic calling units
Data jacks and plugs

Branch Sales Offices:

AL Birmingham
South Central Bell
CA San Francisco
Pacific Telephone
CO Denver
Mountain Bell
CT New Haven
Southern New England
DC Washington
C & P Telephone
GA Atlanta
Southern Bell
IL Chicago
Illinois Bell
IN Indianapolis
Indiana Bell
MA Boston
New England Tel
MS Detroit
Michigan Bell
MO St. Louis
Southwestern Bell
NE Omaha
Northwestern Bell
NJ Bedminster
Atet-Long Lines
NJ Newark
New Jersey Bell
NY New York City
New York Tel
OH Cincinnati
Cincinnati Bell
OH Cleveland
Ohio Bell
PA Philadelphia
Bell of Pennsylvania
WA Seattle
Pacific Northwest Bell
WI Milwaukee
Wisconsin Bell

ATLANTIC RESEARCH CORP

5390 Cherokee Ave
Alexandria, VA 22314
703-642-4000

Advertising page 85

Contact: D Ebert

■ Products & Services

Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
RTS emulator
Network management centers
Technical control centers
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

AZ Tempe
Qualtech
610 W Broadway
602-967-4655

CA Hollywood
O'Halloran Assoc
10700 Ventura Blvd
213-877-0173
CA Palo Alto
O'Halloran Assoc
1020 Corporation Way
415-326-1493
CO Denver
Data Systems Marketing
955 Bannock St
303-573-5133
CO Colorado Springs
Data Systems Marketing
1120 N Circle Dr
303-599-4581
FL Boca Raton
Network Orange
608 Bridgewood Dr
305-392-7487
HI Kailua
Gray Associates
1269 Maleko St
808-261-3751
IL Arlington Hgts
Reshal Assoc Inc
219 W Univ Dr
312-398-7660
KY Louisville
Data Processing Sciences Corp
3715 Bardstown Rd
502-587-6211
MD Edgewater
Commart Inc
3910 W Shore Dr
301-261-4344
MA Fairhaven
Data Brain Inc
Box 161
617-994-3944
MI Brighton
Reshal Assoc Inc
314 S 3 St
313-227-1043
MN Eden Prairie
Reshal Assoc
10521 Lake Fall Dr
612-941-8697
MO Independence
Eng Services Co
2425 S Crysler
816-254-3600
MO St Louis
Eng Services Co
8420 Delmar Blvd
314-997-1515
NJ Ridgewood
Instrumentation Sales Co
171 E Ridgewood Ave
201-445-5210
NJ Palisades Park
Data Net Inc
345 Commercial Ave
201-592-6750
NM Albuquerque
Qualtech
130 Louisiana NE
505-255-6100
NY Selkirk
RG Eng
6 Sherbrook Dr
518-439-3070
NY Rochester
RG Eng
3100 Monroe Ave
716-385-3021
NY East Aurora
RG Eng
67 Reiter Rd
716-655-4322

OH Cincinnati
Data Processing Corp
2327 Park Ave
513-961-0776
OH Cleveland
Data Processing Sciences Corp
17534 Royalton Rd
216-572-1122
OH Dayton
Data Processing Sciences Corp
3300 South Dixie Ave
513-294-2770
OH Toledo
Data Processing Sciences Corp
3126 Sylvania Ave
419-472-0111
TX Richardson
Barry Sales Inc
709 Lingco Dr
214-234-0255
TX Houston
Barry Sales Inc
6400 Westpark
713-784-5860
TX El Paso
Qualtech
Box 26125
915-592-2415
ONTARIO, CANADA
Ottawa
Louis Albert Assoc Inc
2264 Stevenage Dr
613-737-5941
AUSTRALIA
Artarmon
Datamatic Pty Ltd
60/64 Dickson Ave
43 3333
AUSTRIA
Vienna
Gebrueder Schoeller
Industriegasse 7
0222-84 26-31
BELGIUM
Brussels
Simac Elect
Rue Du Progres, 52-Boite 3
02-219.24.51
ENGLAND
Reading, Berkshire
Interlekt Rathbart Ltd
Beacis House, Portman Road
734-59-6226
FRANCE
Paris
Interdata
91402 Orsay Cedex
01-928-0131
GERMANY, WEST
Frankfurt
Telemation GmbH
Bismarckstrasse 8
06196-27054
HONG KONG
Hong Kong
Cable & Wireless Systems Ltd
Box 4477
5-3821291
INDIA
Bombay
Computer Maintenance Services
104 Embassy Centre
242774
ISRAEL
Tel-Aviv
R D T Elect Eng
46 Sokolov St
4843-211

JAPAN

Tokyo
Japan Direx Corp
Getz Bldg; 3-18-12 Roppongi
Minato-Ku
(03) 586-8151

KOREA REP (REP)

Seoul
KDC Corporation
Box 5956
73-8236

MEXICO

Mexico
Informatica y Telecomunicaciones
Inglaterra 85 Coyoacan
(905) 550 66 66

NETHERLANDS

Veldhoven
Simac Elect
Veenstraat 20
040-533-725

NEW ZEALAND

Te Aro, Wellington
CBL Holdings Ltd
PO Box 6646
857-939

NIGERIA

Ibadan
Ruffy Edwards Enterprises Ltd
Box 1521
RUFED, Ibadan 22080

SINGAPORE

Singapore
NECOM Private Ltd
Room 1023 V, Maxwell House
221-2001

SWEDEN

Sigtuna
Datamatrix ab
Villagstan 1 S-190 30
0760 51655

SWITZERLAND

Lyss
Ete-Hager
Rosengasse 5
032-844488

TAIWAN

Taipei
Howteh Enterprises Co Ltd
65 Sung Chiang Rd
(02) 5619440

VENEZUELA

Caracas
Transdata CA
Apartado 51497
33 09 29

ATLAS ENERGY SYSTEMS

9457 Rush St
South El Monte, CA 91733
213-575-0755
Contact: Kenneth G Brill
■ Products & Services
Power supplies
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

CA Santa Ana
Atlas Energy Systems
714-953-9645

CA Santa Clara
Atlas Energy Systems
408-988-5386

IL Chicago
Atlas Energy Systems
312-372-2237

MA Cambridge
Atlas Energy Systems
617-492-2525

AUSTRON DATA SYSTEMS INC

2007 Kramer Lane
Austin, TX 78758
512-836-3523
Contact: David A Huss
■ Products & Services
Front-end processors
Computer/communications interfaces

Branch Sales Offices:

FL Stuart
Remtek
951 Colorado Ave
305-287-8440

GA Atlanta
Remtek
18 Perimeter Park
404-455-4705

TX Dallas
Remtek
13500 Midway Rd
214-387-2855

TX Houston
Remtek
9730 Town Park
713-227-2195

AUTOCALL DIV/FEDERAL SIGNAL CORP

41 E Tucker Ave
Shelby, OH 44875
419-347-2400
Contact: K C Schmunk
■ Products & Services
Fire detection/protection equipment

Branch Sales Offices:

AZ Phoenix
Technical Services Co Inc
723 Maryland Ave
602-264-1738

AZ Tucson
Industrial Time Systems
2104 E 13th St
602-623-6555

CA Los Angeles
Autocall of S California
9800 S Sepulveda Blvd
213-776-7566

CA San Francisco
A H Monson Jr
1108 Howard St
415-861-2050

CO Englewood
E & M Sales Inc
3990 S Lipan St
303-761-6202

FL Jacksonville
Webb-Skillas of Florida
1111 W Adams St
904-353-6950

FL Plantation
Autocall of Florida
5641 W W 13th St
305-791-3945

GA Chamblee
Webb-Skillas & Assoc
5241-G New Peachtree Rd
404-452-1010

GA Augusta
Webb-Skillas & Assoc
20 Eighth St
404-722-4448

GA Red Oak
H C Light
Box 381
404-766-0537

IL S Holland
T F Hornaday Inc
527 W Taft Dr
312-596-7300

IN Indianapolis
C & G Communications Co
6258 La Pas Tr
317-291-3318

KY Ashland
Buchanan Sound & Communications
1409 Central Ave
606-324-8181

MA Marlboro
Autocall of New England
110 Pleasant St
617-485-0967

MA E Longmeadow
A C Incorporated
260 Shaker Rd
413-525-4250

MI Madison Hgts
Autocall of Michigan
32500 Concord
313-588-9460

MI Muskegon Hgts
Seaway Time Equipment Co Inc
2540 Peck St
616-733-2239

MN Wayzata
Protection Systems Inc
250 N Central Ave
612-473-1543

MO St Louis
R C Equipment Co
10 Clayton Downs LN
314-432-4529

NJ Ocean
Autocall-Metro
35 Dwight Dr
201-531-1208

NM Albuquerque
E & M Sales
2840 Vasser Blvd NE
505-883-8955

NY Albany
M M Hayes
257 Osborne Rd
518-459-5545

NC Matthews
T H Lingle Assoc
3100 Valentine LN
704-847-8968

OH Cincinnati
Wm J Davis Co Inc
8050 Hosbrook Rd
513-891-1972

OH Westlake
R M Austin & Assoc
26612 Center Ridge Rd
216-871-0788

OH Toledo
Lantreth Inc
PO Box 8659
419-841-7080

PA Narberth
J H Metzgar
713 Braeburn LN
215-839-4455

PA Monroeville
Howard A Deevers Co Inc
2549 Moss Side Blvd
412-372-4000

SC Columbia
J P Torbert
1871 Woodsboro Dr
803-798-7366

TN Alcoa
Gallagher & Assoc Inc
356 Sanderson St
615-984-7340

TN Nashville
JLC Corp
148 Park South Ct
615-256-8951

TX Garland
Autocall of Southwest/Dallas
1700 Eastgate Dr
214-681-0279

TX Houston
Autocall of the Southwest
4800 W 34th St
713-681-5100

UT Salt Lake City
L R Smith
1324 Wilson Ave
801-521-3420

VA Chantilly
T L Garden & Assoc Inc
14650 Lee Rd
703-968-7440

VA Richmond
Autocall of Virginia
5545 Warwick Rd
804-233-5358

WA Tacoma
Autocall of Washington
7240D McKinley Ave
206-475-3393

WV Beckley
Professional Electronics Co
203 McCreery St
304-253-0473

WI Oshkosh
Protection Systems Inc
123 Snell Rd
414-725-7666

AUTOMATIC CONTROL SYSTEMS INC

8515 Freeway Dr
Macedonia, OH 44056
216-467-2186
Contact: K S Wetzel
■ Products & Services
Microwave/laser systems
Infrared systems
FM systems

AVANTEK

3175 Bowers Ave
Santa Clara, CA 95051
408-727-0700
Contact: John Tarvin
■ Products & Services
Microwave/laser systems

Branch Sales Offices:

CA Santa Clara
Avantek
3175 Bowers Ave
408-249-0700

GA Stone Mt
Avantek
499 Rock Shadow Ct
404-498-2151

KS Shawnee
Avantek
Box 3116
913-631-8013

OH N Olmsted
Avantek
3181 W 230 St
216-779-0199

AVANT GARDE COMPUTING

2091 Springdale Rd
Cherry Hill, NJ 08003
609-424-9620
Contact: Gerald J Lavine
■ Products & Services
Response-time monitors
Network management centers
Technical control centers

Branch Sales Offices:

CA Sherman Oaks
Avant-Garde Computing Inc
Box 5368
213-995-0324

NY New York
Avant-Garde Computing Inc
708 Third Ave
212-687-8838

AVANTI COMMUNICATIONS CORP

Aquidneck Ind Pk
Newport, RI 02840
401-849-4660
Advertising page 62
Contact: J Marvin Reynolds
■ Products & Services
Modem sharing units
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Modem eliminators
Cables, electrical prefabricated extending
Computer/communications interfaces
Switches, data communications, automatic
Data communications consultants

Branch Sales Offices:

CA Mountain View
CSS Telecommunications
2680 Bay Shore Frontage Rd
415-964-4335

FL Orlando
Col-Ins-Co
Box 13189
305-423-7615

IL Rolling Meadows
Sea Inc
1225 Carnegie St
312-255-4820

IN Carmel
SEA Inc
624-B S Rangeline Rd
317-846-2591

MA Framingham
Data Comm Assoc
1 Birchmeadow Cir
617-877-2984

MI Ann Arbor
Ashby Associates Inc
4141 Jackson Rd
313-996-5788

MN Minneapolis
Sea Inc
7601 N Kentucky Ave
612-425-4455

MO Grandview
Digital Systems Sales Inc
4006 E 137 Terr
816-765-3337

NJ Ridgewood
Instrumentation Sales Co
Box 403
201-445-5210

NM Las Cruces
BFA Corp
Corner of Hadley & Motel Blvd
505-524-9693

NY Selkirk
RG Engineering
6 Sherbrook Dr
518-439-3070

NC Winston-Salem
Col-Ins-Co Inc
Box 11607
305-423-7615

OH Dayton
Ashby Assoc Inc
4130 Linden Ave
513-252-5627

TX San Antonio
Technical Concepts Corp
8415 Datapoint Dr
512-699-6345

WA Seattle
CSS Telecommunications
8609 Roosevelt Way NE
206-527-4750

WI Waukesha
Sea Inc
2423 Pebble Valley Rd
414-547-6637

AXIOM CORP

5932 San Fernando Rd
Glendale, CA 91202
213-245-9244
Contact: Simon J Harrison

Branch Sales Offices:

AL Huntsville
Scientific Devices
904 Bob Wallace Ave SE
205-536-1969

CA Sunnyvale
Electronic Marketing Specialists
599 N Mathilda Ave
408-245-9291

CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244

CA Tustin
Electronic Marketing Specialists
2600 Walnut Ave
714-832-9920

CA Tustin
Electronic Mktg Spec
2600 Walnut Ave
714-832-9920

CA Mountain View
The Gene C Woempner Co
2241 Charleston Rd
415-964-5454

CO Littleton
Eissler Sales & Service
7132 S Davies St
303-794-1779

CT Stamford
NPM Assoc Inc
64 Pinnacle Rock
203-329-0022

FL Orlando
Scientific Devices
806-26 St
305-841-8180

FL Shalimar
Scientific Devices
21 Birch Ave
904-651-4407

Stay up-to-date with new catalog
information and new product
announcements.
Turn to **UpDate Service Card,**
page 201.

IL Des Plaines
Lincoln Hodges & Assoc
3158 Des Plaines Ave
312-297-3810

MD Gaithersburg
General Scientific Corp
Box 2145
301-840-9545

MI Ann Arbor
Lincoln, Hodges & Assoc
201 S Main St
313-995-2155

NY Mt Vernon
Sonkin Assoc
10 Fiske Pl
914-668-9809

NC Winston Salem
Scientific Devices
Box 11136
919-765-5766

PA Glenside
Wyncote Instrumentation Co
2689 Limekiln Pike
215-576-5505

TX Dallas
J Clay Co
2619 Electronic Ln
214-350-1281

TX Alief
J Clay Co
Box 656
713-777-4131

WA Bellevue
Hood Eng
12835 Bellevue-Redmond Rd
206-453-9375

WI Waukesha
Lincoln Hodges & Assoc
217 Wisconsin Ave
414-542-3087

AUSTRALIA
Auburn NSW 2144
Warburton Franki Pty Ltd
199 Paramatta Rd
011-61-2-678-1711

BELGIUM
Brussels 1150
Intercontinental Services Inc
Avenue Chant d'Oiseau
106; Vogelzanglaan
011-32-2-647-9845

ENGLAND
Thame Oxon
Memec Ltd
Thame Park Ind Estates
011-4-84-421-3146

FRANCE
F-92220 Bagneux
Auctel
143 Rue des Meuniers
011-33-41-664-10-50

GERMANY, WEST
8000 Munich
Wetronic Automation
Claude Lorraine Strasse 29
011-49-89-652-096

INDIA
Madras
Promac
37 McNichols Rd
662190

ISRAEL
Tel-Aviv
Milchan Bros Ltd
29 Karlebach St
011-3-285282

JAPAN
Yokohama
Nippon Hamlin
88 Komaoka-Cho

NETHERLANDS
Hertogenbosch
Computata
Rietveldeweg 49
011-31-73-215700

NORWAY
N-Oslo
ITT Instrument
Postboks 130; Kaldbakken
011-47-2-162-610

SINGAPORE
Singapore
Tan Accounting
Kim Tian Rd
011-65-2-700411

SOUTH AFRICA
Cape Town
Eagle Electronics
31-41 Hout St
011-27-21-45-1421

SPAIN
Madrid
Unitronics SA
Torre de Madrid; Pl 12
011-34-1-242-5204

SWEDEN
Vaxholm
Saven AB
Strandgatan 3; S-185 000
011-46-764-315-80

SWITZERLAND
8008 Zurich
Omni Ray
Dufourstrasse 56
011-41-1-47-8200

TAIWAN
Taipei
Syscom Computer Eng Co
283 Fu-Hsin S Rd
011-86-2-7022156-8

TAIWAN
Taipei
Syscom Computer Engineering
358 Block 1141 Kimtian Rd
011-65-2-700411

VENEZUELA
Caracas
Digidata
Apartado de Correos 70657
011-58-2-387357

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

AYDIN CONTROLS
414 Commerce Dr
Ft Washington, PA 19034
215-542-7800
Contact: J. Taylor
■ Products & Services
Minicomputers
DDP systems
Data entry terminals
Graphic display terminals
Programmable terminals
Interactive terminals

Branch Sales Offices:

CA San Jose
Aydin Controls/Aydin Microwave
75 Trimble Rd
408-946-5600

CA Huntington Bch
Aydin Controls
20411 Ravenwood Ln
714-964-4333

DC Washington
Aydin Controls/Aydin Corp
475 L'Enfant Plaza
202-488-4138

FL Sanford
Aydin Controls
100 Par Pl
305-322-8159

MD Lanham
Aydin Controls
5900 Princess Garden Pkwy
301-459-8373

NH Hudson
Aydin Controls
96 River Rd
603-880-8107

PA Ft Washington
Aydin Controls
414 Commerce Dr
215-542-7800

TX Spring
Aydin Controls
4059 Evening Tr
713-444-7740

AUSTRALIA
Melbourne
Datatel
3-7 Raglan St
03-699-7614/7920

DENMARK
Glostrup
Technitron ApS
Smedeland 8
2-96-98-22

ENGLAND
Hertfordshire
Aydin Controls/Vector UK
Andre House, Salisbury SQ
44-7072-71281

FRANCE
Sevres 92310
Tekelec Air Tronic
Rue Carle Vernet BP #2
1-534-75-35

GERMANY, WEST
Munich
Logotec GmbH
Dusseldorfer Strasse S13
089-3008637.

GREECE
Athens
Valliant Ltd
Niriidon 4-6
718-246

HONG KONG
Hong Kong
Patrick Trading Corp
5 Queens Rd Central
5-220964

INDIA
New Delhi
Aviation Dev Consultants
C-87 Defence Colony
625189

INDONESIA
Barat
P T Electronica Nusantara
JIS Parman 105, Jakarta
592026/8

ISRAEL
Ramaf-Gan
Applied Tech Svcs Ltd
Box 8153
03-716855

ITALY
Milan
Technitron Srl
Via California 12
02-4690312

JAPAN

Tokyo
Pentel Elctns Ltd
7-11 Shinkawa 1 Chome Chuo-Ku
03-553-2371

NETHERLANDS

Amsterdam
Technitron B V
Box 7542 Schiphol Airp E
020-458755

NORWAY

Oslo 6
Data Inform
Box 39 Skoyenansen
02 26 55 70

PAKISTAN

Karachi 2
General Services Corp
Box 5694; 1.1 Chundrigar Rd
23-53-83

REPUBLIC OF CHINA

Taipei, Taiwan
Syscom Computer Eng Co
Box 48-130
7514504

SO. W. AFRICA (NAMIBIA)

Johannesburg
B Owens Jones
Box/Bosbus 68
11-22-5552

SPAIN

Madrid
Aupoca S A
Bernardino, Obregon, 26
467-60-94

SWEDEN

Farsta
Tel Inter Aktiebolag
Box 59
0894-0490

TURKEY

Ankara
Aydin Corp
Bugday Sokak 2/3; Kavaklidere
27-81-60

AZURDATA INC

4102-148 Ave NE
Redmond, WA 98052
206-881-5100
Contact: Sonja Neal
■ Products & Services
Bar code readers
Programmable terminals
Portable data entry terminals
Remote job entry terminals

Branch Sales Offices:

GA Lithonia
Azurdata Inc
6399 Evansmill Way
404-482-6020

MA

Milton
Azurdata Inc
1232 Brook Rd
617-696-4900

MO

St Louis
Azurdata Inc
13120 Amiott Dr
314-576-4411

PA

Bridgeville
Azurdata Inc
548 Hunters Path Rd
412-344-4488

TX

Arlington
Azurdata Inc
2719 Ave E
817-277-5731

TX

Addison
Azurdata Inc
15840 Addison Rd
214-934-8040

ONTARIO, CANADA

Etobicoke ON
Azurdata Inc
Box 83; Islington Sta B
416-625-5934

BALL COMPUTER PRODUCTS DIV

860 E Arques Ave
Sunnyvale, CA 94086
408-733-6700
Contact: R Bravo
■ Products & Services
Disc drives, large

BASF SYSTEMS

Crosby Dr
Bedford, MA 01730
617-271-4000
Contact: David Pippin
■ Products & Services
Cartridges
Cassettes
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic

Branch Sales Offices:

CA Santa Monica
BASF Systems
1307 Colorado Av
213-451-8781

CA

Newport Beach
BASF Systems, Memory Div
1100 Quail St
714-752-6126

IL

Palatine
BASF Systems
800 E NW Hwy
312-934-4990

ME

Bedford
BASF Systems
Crosby Dr
617-271-4030

ME

Bedford
BASF Systems, Memory Div
Crosby Dr
617-271-4168

MD

Rockville
BASF Systems
670 Lofstrand La
301-424-7100

TX

Dallas
BASF Systems
13612 Midway Rd
214-233-6607

ONTARIO, CANADA

Rexdale
BASF Canada Ltd
10 Constellation Ct
416-677-1280

QUEBEC, CANADA

Montreal
BASF Canada Ltd
5850 Cote de Liesse Rd
514-341-5411

GERMANY, WEST

Mannheim
BASF Aktiengesellschaft
Sparte M & N/Verkauf;
Gottlieb-Daimler-Strasse 10
49/621-40081

BEEHIVE INTERNATIONAL

4910 Amelia Earhart Dr
Salt Lake City, UT 84125
801-355-6000
Contact: Chuck Srogus
■ Products & Services
Programmable terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Costa Mesa
Beehive International
3190 G Airport Loop Dr
714-540-8404

CO

Sunnyvale
Beehive International
1022 W Maude
408-738-1560

FL

Altamonte Springs
Beehive International
251 Maitland Ave
305-830-4666

IL

Arlington Heights
Beehive International
415 W Golf Rd
312-593-1565

MA

Woburn
Beehive International
304 Cambridge Rd
617-933-0202

NY

New York
Beehive International
420 Lexington Ave
212-682-2760

UT

Salt Lake City
Beehive International
4910 Amelia Earhart Dr
801-355-6000

VA

Falls Church
Beehive International
7777 Leesburg Pike
703-356-5133

NETHERLANDS

Amsterdam
Beehive International
Schipol Airport; Bldg 70 Schipol
East
020-451522

BEHLMAN ENGINEERING CORP

1142 Mark Ave
Carpinteria, CA 93013
805-684-8311
Contact: Edward C Bertolet
■ Products & Services
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AZ Phoenix
Davis Co
3431 N 43 St
602-955-2266

CA

Los Angeles
T L Snitzer Co
9005 Exposition Blvd
213-836-6170

CA

Cupertino
T L Snitzer Co
10320 DeAnza Blvd
408-257-8333

CA

Del Mar
T L Snitzer Co
Box 805
714-226-0305

FL

Satellite Beach
Reynolds & Assoc
476 N A1A
305-773-4700

MD Rockville
Farrell Assoc
416 Hungerford Dr
301-424-9460

MA Needham
Addelco
56 Pickering
617-444-4754

MN St Paul
Dytec North
1821 University Ave
612-645-5816

PA Chester Springs
Letronix
Rt 100
215-458-8977

BELDEN CORP
2000 S Batavia
Geneva, IL 60134
Contact: William Donahoe
■ Products & Services
Modems, broadband group (to 50 kb/s)
Cables, electrical prefabricated extending
Cables, lightwave (optical fiber)

Branch Sales Offices:

CA Irvine
Belden Corp
2222 Martin St
714-833-7700

IN Richmond
Belden Corp Electronic Division
Box 1980
317-983-5200

MA Framingham
Belden Corp
1661 Worcester Rd
617-872-7846

BILLINGS COMPUTER CORPORATION

2000 E Billings Ave
Provo, UT 84601
800-453-1404
Contact: Tom D McDonald
■ Products & Services
Front-end processors
Minicomputers
Packet processors
Remote network processors
Acoustic couplers
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
DDP systems
Disc drives, floppy
Disc drives, large
Remote job entry terminals
Video data terminals (KSR)
Word processors, communicating
Data communications software, distributed
data processing system vendors
Maintenance organizations

Branch Sales Offices:

CA Anaheim
Cal-Disk/Billings Computer
Center
2921 E La Palma
800-854-6187

MO Independence
Billings Computer Center
18600 E 37th Terrace S
816-373-0000

PA Blue Bell
Billings Computer Center
1777 Walton Rd
215-628-9955

UT Provo
Billings Computer Center
379 N University
801-377-4446

BIZCOMP CORPORATION

Box 7498
Menlo Park, CA 94025
415-854-5434
Advertising page 69
Contact: Sls Mgr
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Computer/communications interfaces
Data access arrangement devices
Data communications software,
communications processors vendors

BMS DATA HANDLING INC

12155 Magnolia Ave
Riverside, CA 92503
714-781-5588
Contact: Larry Cunningham
■ Products & Services
Data entry terminals
Computer/communications interfaces
Data communications software, intelligent
terminal vendors
Maintenance organizations

Branch Sales Offices:

CA Riverside
BMS Data Handling Inc
12155 Magnolia Ave
714-781-5588

BOEING COMPUTER SERVICES COMPANY

177 Madison Ave
Morristown, NJ 07960
201-540-7700
Contact: William O Sparks
■ Products & Services
Data communications consultants
Educational services
Timesharing/service bureaus

Branch Sales Offices:

AK Anchorage
Boeing Computer Services Co
3230 C St
907-278-1511

CA El Segundo
Boeing Computer Services Co
871 S Nash St
213-640-0210

CA Sunnyvale
Boeing Computer Services Co
310 Potrero
408-245-8550

CA San Francisco
Boeing Computer Services Co
425 California St
415-392-6565

CA Newport Beach
Boeing Computer Services Co
4029 Westerly Pl
714-833-1273

CA San Diego
Boeing Computer Services Co
2254 Moore St
714-294-9920

CA Sacramento
Boeing Computer Services Co
530 Bercut Dr
916-447-2113

CO Englewood
Boeing Computer Services Co
7995 E Prentice Ave
303-770-2630

GA Atlanta
Boeing Computer Services Co
5775-A Peachtree-Dunwoody Rd
404-247-5500

IL Chicago
Boeing Computer Services Co
35 E Wacker
312-781-7900

KS Wichita
Boeing Computer Services Co
453 S Webb Rd
316-687-3386

MA Wellesley
Boeing Computer Services Co
40 William St
617-237-9814

MI Dearborn
Boeing Computer Services Co
One Parklane Blvd
313-271-8000

NE Omaha
Boeing Computer Services Co
17171 Mercy Rd
402-397-2401

NY New York
Boeing Computer Services Co
825 Third Av
212-486-7240

OH Cleveland
Boeing Computer Services Co
20600 Chagrin
216-921-0800

OR Portland
Boeing Computer Services Co
5100 SW Macadam Ave
503-242-2500

PA Philadelphia
Boeing Computer Services Co
Scott Plaza 2, Ind Hwy
215-522-3600

TX Dallas
Boeing Computer Services Co
1111 W Mockingbird Lane
214-630-4701

TX Houston
Boeing Computer Services Co
13101 NW Frwy
713-939-1722

VA Vienna
Boeing Computer Services Co
7980-90 Galloway Court
703-821-6200

WA Seattle
Boeing Computer Services Co
6510 S Center Blvd
206-773-8683

ALBERTA, CANADA
Calgary
Boeing Computer Services Canada
Ltd
505 Second St
403-269-8281

ALBERTA, CANADA
Edmonton
Boeing Computer Services Canada
Ltd
10123 99th St
403-426-0167

BRITISH COLUMBIA, CANADA
Vancouver
Boeing Computer Services Canada
Ltd
134 Abbott St
604-688-2266

For further catalog information, turn to
UpDate Service Card, page 201.

ENGLAND

Watford
Boeing Computer Centres Ltd
31 Clarendon Rd
011-44-923-38321

**BOLT BERANEK & NEWMAN
INFORMATION MANAGEMENT CORP**

50 Moulton St
Cambridge, MA 02138
617-491-1850

Advertising pages 18-19

Contact: John M McQuillan

■ Products & Services

Message switchers

Word processors, communicating

Data communications software,

communications processors vendors

Data communications software, distributed

data processing system vendors

Data communications software, independent

software houses

Branch Sales Offices:

DC Arlington
1701 N Ft Myer Dr
703-524-4870

BOOLE & BABBAGE INC

510 Oakmead Pkwy
Sunnyvale, CA 94086

Contact: Dennis Crow

■ Products & Services

Data security devices, software security modules

Branch Sales Offices:

CA San Francisco
Boole & Babbage Inc
680 Beach St
415-885-1888

BOSCHERT INC

384 Santa Trinita Ave
Sunnyvale, CA 94086
408-732-2400

Contact: Fred Hirsch

■ Products & Services

Uninterruptible power supplies, line correctors, etc

Branch Sales Offices:

AZ Scottsdale
Fred Board Assoc
7353 Sixth Ave
602-994-9388

CA Sunnyvale

Criterion Inc
3350 Scott Blvd
408-988-6300

CA Sunnyvale

Bell Ind
1161 N Fair Oaks Ave
408-734-8570

CO Denver

Electrodyn
4600 E Asbury Cir
303-759-4409

FL Altamonte Springs

EIR
701 Semoran Blvd
305-830-9600

MA Waltham

Datcom Inc
55 Moody St
617-891-4600

MI Brighton

SAI Mktg Corp
Box N
313-227-1786

MN Minneapolis

Stan Clothier Co
7423 Washington S
612-944-3456

NJ Marlton

Boschert
136 Briar Ct
609-983-6240

NJ Marlton

BGR
3001 Green Tree Exec Campus
609-428-2440

NY Ithaca

Bob Dean Inc
710 W Clinton St
607-272-2187

TX Dallas

Microsystems Mktg
13777 N Central Expwy
214-238-7157

VA Lynchburg

Glen White Assoc
311 Old Forest Rd
804-384-1538

WA Bellevue

Olson Ferrec
12722 NE 20th
206-883-7792

ONTARIO, CANADA

Ontario
Munro Elect
7171 Torbram Rd
416-676-1042

BELGIUM

Bruxelles
Bodelco SA Electronics
32 Av Herbert Hoover
(0032) 0-27354137

DENMARK

Copenhagen
Scansupply
20 Nannasgade; DK-2200
01-83-50-90

ENGLAND

Thame; Oxon
Memec Ltd
Thame Pk Ind Est

FINLAND

Helsinki 55
SW Instruments
Kabstulantie 4B

FRANCE

Paris
Tekelec
Cite Des Bruyeres, Bve Carle
Vernet

GERMANY, WEST

Vaterstetten
Boschert
Primelstrasse
08106-8644

GERMANY, WEST

Munchen 80
Bitronic
Einsteinstr 127

GERMANY, WEST

Eching 6, Munchen
Kontron
Breslauer Strasse 2

NETHERLANDS

Rijswijk
Bodelco BV Elect
Verrijn Stuartlaan 29

SWITZERLAND

Mutschellen
W Stolz AG
Bellikonstr 218
057-54655

BO-SHERREL CO

12813 Camino Del Valle
Poway, CA 92064
415-792-0354
Contact: Carlene I Rathert
■ Products & Services
Line drivers
Modems, limited distance

BOSTON FINANCIAL & EQUITY CORP

712 Beacon St
Boston, MA 02215
617-261-2750
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Multiplexers, group band
Remote network processors
Acoustic couplers
Digital service units
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)

Add-on main memory

Cartridges

Cartridge drives

Cassettes

Cassette drives

Disc drives, floppy

Disc drives, large

Tape, magnetic

Tape drives, magnetic

Tape, paper

Tape punch/reader, paper

Badge readers

Bar code readers

Batch terminals

Graphic display terminals

Programmable terminals

Remote line printers

Remote job entry terminals

Teleprinters, impact

Teleprinters, non-impact

Teletypewriters

Video data terminals (KSR)

Video data terminals (RO)

Automatic answering units

Automatic calling units

Cables, electrical prefabricated extending

Data access arrangement devices

Switches, data communications, automatic

Switches, data communications, manual

Lease and resale organizations

Used equipment

BOWMAR/ALI INC

531 Main St
Acton, MA 01720
617-263-8365
Contact: J N White
■ Products & Services
Error rate detectors

Branch Sales Offices:

CT Darien
Massini Assoc
Box 2044
203-323-9945

GA Decatur

EME II
2522 Tanglewood
404-325-0165

MD Edgewater

Commart Inc
3910 W Shore Dr
301-261-4344

NC High Point
EME I
112 Buena Vista
919-869-3335

TX Richardson
Comspec
717 Lingco
214-234-4137

BRADLEY TELECOMMUNICATIONS

117 Ft Lee Rd
Leonia, NJ 07605
201-461-5903

■ Products & Services
Electrical-parameters test equipment
Technical control centers
Selection & transfer equipment, monitor &
test switching equipment

Branch Sales Offices:

CA Newport Beach
Helfrich Co
1831 Kings Rd
714-631-2300

CA Walnut Creek
Helfrich Co
1566 Spring Brook Rd
415-938-9577

CA Lakewood
Helfrich Co
4149 Sebrun Ave
213-420-1466

GA Atlanta
Datec Customer Service Inc
2200 Edgemore Dr
404-622-3196

IL Wheeling
IBC Data
925 N Milwaukee Ave
312-459-8866

MD Edgewater
Commart Inc
3910 W Shore Dr
301-261-4344

MN Minneapolis
Rae Assoc
7317 Cahill Rd
612-835-2100

TX Dallas
W & G Instruments Inc
7632 Mullrany Dr
214-423-0344

THE BRAEGEN CORP

20740 Valley Green Dr
Cupertino, CA 95014
408-255-4200
Contact: W P McCarthy

■ Products & Services
Concentrators
Front-end processors
Packet processors
DDP systems
Local network systems
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Batch terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Data communications software, distributed
data processing system vendors

Data communications software, intelligent
terminal vendors
Maintenance organizations

Branch Sales Offices:

CA Rodondo Beh
Braegen Corp
213-679-2268

CA Orange
Braegen Corp
714-978-1720

CA Santa Clara
Braegen Corp
408-496-6578

CO Denver
Braegen Corp
303-340-1062

CT Greenwich
Braegen Corp
212-736-8873

CT Hartford
Braegen Corp
203-622-0293

GA Norcross
Braegen Corp
404-449-4610

IL Rosemont
Braegen Corp
312-693-6030

MA Waltham
Braegen Corp
617-890-4850

MI Southfield
Braegen Corp
313-559-5750

MN Minneapolis
Braegen Corp
612-831-5007

MO St Louis
Braegen Corp
314-968-4314

NJ Union
Braegen Corp
201-687-5030

NY NY
Braegen Corp
212-622-0293

OH Cleveland
Braegen Corp
216-362-7280

PA Bala Cynwyd
Braegen Corp
215-667-1740

PA Pittsburgh
Braegen Corp
412-922-5336

TX Dallas
Braegen Corp
214-386-4777

TX Houston
Braegen Corp
713-776-3840

VA McLean
Braegen Corp
703-442-8504

WA Bellevue
Braegen Corp
206-747-9321

BRAEGEN CORP MINI-PERIPHERALS DIV

3340 E La Palma Ave
Anaheim, CA 92806
714-632-5245
Contact: Satish Trikha

■ Products & Services
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large

Disc packs
Tape, magnetic
Tape drives, magnetic
Data entry terminals
Remote line printers
Terminal interfaces
Educational services
Maintenance organizations

Branch Sales Offices:

CA Santa Clara
Braegen Corp
3375 Scott Blvd
408-496-6578

IL Rosemont
Braegen Corp
9801 Higgins St
312-692-2250

MA Waltham
Braegen Corp
470 Totten Pond Rd
617-890-4890

BRAEMER COMPUTER DEVICES INC

11950 12 Ave S
Burnsville, MN 55337
612-890-5135
Contact: Richard Morris

■ Products & Services
Cassette drives

Branch Sales Offices:

AL Huntsville
Alpha Marketing Inc
904 Bob Wallace Av
204-533-0766

FL Ft Lauderdale
Interface Dynamics
1430 NE 60 St
305-772-7998

GA Tucker
Alpha Mktg
3985 Northlake Creek Dr
404-491-9430

IN Carmel
Carter-McCormic-Peirce
1717 E 116 St
317-844-4175

IA W Des Moines
Nevco Inc
730-34 St Pl
515-225-9866

MA Cambridge
Media Systems Inc
139 First St
617-876-0164

MI Farmington
Carter-McCormic-Peirce
23995 Freeway Pk Dr
313-477-7700

MO Kansas City
Nevco Inc
1715 Baltimore
816-421-1751

MO St Louis
Nevco Inc
10132 Glenfield Terr
314-843-7406

NJ Bogata
Neville & Vespo Corp
114 E Main St
201-487-1505

NY Cazenovia
Naylor Electronic Co Inc
9 Clark St
315-655-8174

OH Cleveland
Carter-McCormic-Peirce
22650 Lorain Rd
216-779-5100

OH Dayton
Carter-McCormic-Peirce
4977 Northcutt Pl
513-222-7700

OK Tulsa
Norcom Inc
3340 S Memorial Blvd
918-664-9526

OR Portland
Tasco Inc
9999 SW Wilshire
503-292-1473

PA Dresher
J Fishman & Assoc
1645 Dublin Rd
215-646-3666

PA Pittsburgh
Carter-McCormic-Peirce
409 Beatty Rd
412-372-4415

TX Dallas
Norcom Inc
4450 Sigma Rd
214-386-4888

TX Houston
Norcom Inc
9720 Town Pk
713-988-0022

WA Bellevue
Tasco Inc
606-110 Ave NE
206-453-1414

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

W A BROWN INSTRUMENTS

PO Box 513
Orlando, FL 32802
305-425-5505
Contact: J Edward Bucher
■ Products & Services
Modem sharing units
Acoustic couplers
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Disc drives, floppy
Tape punch/reader, paper
Bar code readers
Data entry terminals
Graphic display terminals
Programmable terminals
Remote line printers
Teleprinters
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Code converters
Data security devices, encoder/decoders
Furniture, cabinets, terminal enclosures
Ribbons and supplies for terminals and
printers
Maintenance organizations

Branch Sales Offices:

AL Huntsville
W A Brown Instruments Inc
Box 4560
205-883-8660

FL Orlando
W A Brown Instruments Inc
222 Weber St
305-425-5505

GA Atlanta
W A Brown Instruments Inc
3070 Presidential Dr
404-455-1035

LA Mandeville
W A Brown Instruments Inc
Box 786
504-626-9701

NC Durham
W A Brown Instruments Inc
828 Glendale Ave
919-683-1580

TN Oak Ridge
W A Brown Instruments Inc
733 Emory Valley Rd
615-482-5761

BTI COMPUTER SYSTEMS

870 W Maude Ave
Sunnyvale, CA 94086
408-733-1122
Contact: Downey Overton
■ Products & Services
Local network systems

Branch Sales Offices:

CA Sunnyvale
BTI
870 W Maude Ave
408-733-1122

CA El Monte
BTI
11100 Valley Blvd
213-350-4383

CA Newport Beach
BTI
1100 Quail St
714-955-0890

GA Atlanta
BTI
4470 Chamblee-Dunwoody Rd
404-455-7517

IL Palatine
BTI
2401 Plum Grove Rd
312-397-9190

MA Braintree
BTI
28 River St
617-843-4700

MN Minneapolis
BTI
3001 Metro Dr
612-854-1122

MO St Louis
BTI
111 W Port Plaza
314-878-8110

NJ Cherry Hill
BTI
900 Dudley Ave
609-662-1122

NJ Piscataway
BTI
225 Old New Brunswick Rd
201-457-0600

TX Dallas
BTI
1341 W Mockingbird La
214-630-2431

ENGLAND

Birmingham
BTI
1433 Bristol Rd S
021-477-3846

BUNKER RAMO CORP/INFO SYS DIV

35 Nutmeg Dr
Trumbull, CT 06609
203-377-4141
Contact: Edward Trapp
■ Products & Services
DDP systems
Local network systems
Programmable terminals
Interactive terminals
Terminal controllers
Video data terminals (KSR)

Branch Sales Offices:

CA Los Angeles
Bunker Ramo Corp
1 Wilshire Bldg
213-623-3590

CA San Francisco
Bunker Ramo Corp
450 Sansome St
415-391-0255

CO Aurora
Bunker Ramo Corp
14291 E 4 Ave
303-344-2432

CT Hartford
Bunker Ramo Corp
630 Oakwood Ave
203-728-0335

GA Atlanta
Bunker Ramo Corp
5600 Roswell Rd NE
404-252-2004

IL Chicago
Bunker Ramo Corp
150 South Wacker Dr
312-782-4294

KS Overland
Bunker Ramo Corp
9222 73rd St
913-772-1806

MI Grosse Pointe
Bunker Ramo Corp
63 Kercheval Ave
313-964-0690

NY New York
Bunker Ramo Corp
77 Water St
212-248-3400

OH Columbus
Bunker Ramo Corp
2814 S Hamilton Rd
614-861-4203

PA Pittsburgh
Bunker Ramo Corp
2987 Babcock Blvd
412-931-5800

TX Dallas
Bunker Ramo Corp
2997 LBJ Frwy
214-243-5511

VA Arlington
Bunker Ramo Corp
1500 Wilson Blvd
703-524-8700

WA Bellevue
Bunker Ramo Corp
1601 114th Ave SE
206-451-0285

C & L TERMINALS INC

1215 SE Ivon
Portland, OR 97202
503-231-0333
Contact: Robt C Hampton
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, multiport

Modems, voice-grade, low-speed
(0-1,200 b/s)
Disc drives, floppy
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Paper for terminals
Ribbons and supplies for terminals and
printers
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA San Jose
C & L Terminals
1450 Koli Circle
408-279-2284
WA Bellevue
C & L Terminals Inc
13500 Bell-Red Rd
206-641-6820
WA Spokane
C & L Terminals Inc
Northtown Center
509-484-3622

C&W INCOTEL LTD

One Penn Plaza
New York, NY 10119
212-594-8340
Contact: V A Littlefield
■ Products & Services
Front-end processors
Message switchers
Minicomputers
Data communications consultants
Data communications software, independent
software houses

Branch Sales Offices:

NY New York
C&W Incotel Ltd
One Penn Plaza
212-594-8340

ENGLAND

London
C&W Incotel Ltd
Mercury House
01-242-4433

CADO SYSTEMS CORP

2771 Toledo St
Torrance, CA 90503
213-320-9660
Contact: Joel D Leslie
■ Products & Services
Message switchers
Minicomputers
Remote network processors
DDP systems
Electronic mailboxes
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Video data terminals (KSR)
Word processors, communicating
Computer/communications interfaces
Protocol converters

CAERE CORP

100 Cooper Ct
Los Gatos, CA 95030
408-395-7000
Contact: Bill Lavallie
■ Products & Services
Data entry terminals

Branch Sales Offices:

CA Los Angeles
Caere Corp
701 E Third St
213-617-0448
IL Wheeling
Caere Corp
746 Lakeview Dr
312-577-9224
LA Baton Rouge
Caere Corp
10076 Great Smoky
504-275-9350
NJ Toms River
Caere Corp
513 Main St
201-244-5100
PA Ardmore
Caere Corp
109 Whitmarsh Rd
215-642-0900

CAL DATACOM

1844 Carnegie Ave
Santa Ana, CA 92705
800-854-0171
Contact: Walter J Becher
■ Products & Services
Acoustic couplers
Remote line printers
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

CALIFORNIA COMPUTER PRODUCTS
INC

2411 W LaPalma Ave
Anaheim, CA 92801
714-821-2011
Contact: James Waltz
■ Products & Services
Digital plotters
Interactive terminals
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

AZ Tempe
California Computer Products Inc
1414 W Broadway
602-894-9468
CA Orange
California Computer Products Inc
1717 Orangewood Ave
714-978-7111
CA San Francisco
California Computer Products Inc
1750 Montgomery St
415-392-4380
CA Santa Clara
California Computer Products Inc
3255 Scott Blvd
408-727-0936
CO Englewood
California Computer Products Inc
14 Inverness Dr E
303-770-1950
GA Norcross
California Computer Products Inc
150 Technology Park
404-448-4522

IL Schaumburg
California Computer Products Inc
949 N Plum Grove Rd
312-884-0300
KS Shawnee Mission
California Computer Products Inc
6811 West 63rd St
913-362-0707
MA Waltham
California Computer Products Inc
470 Totten Pond Rd
617-890-0834
MI Southfield
California Computer Products Inc
17000 W Eight Mile Rd
313-569-3123
MN Bloomington
California Computer Products Inc
2950 Metro Dr
612-854-3448
MO St Louis
California Computer Products Inc
200 S Hanley Rd
314-863-2711
NJ Woodbridge
California Computer Products Inc
1000 Route 9 East
201-636-6500
OH Cleveland
California Computer Products Inc
15887 Snow Rd
216-362-7280
OH Dayton
California Computer Products Inc
4977 Northcutt Pl
513-276-5247
OK Tulsa
California Computer Products Inc
9920 E 42 St
918-663-7392
OR Portland
California Computer Products Inc
5520 SW Macadam
503-241-0974
PA Wayne
California Computer Products Inc
999 Old Eagle School Rd
215-688-3405
PA Pittsburgh
California Computer Products Inc
Parkway Center
412-922-3430
TX Dallas
California Computer Products Inc
7540 LBJ Fwy
214-661-2326
TX Houston
California Computer Products Inc
9000 Southwest Frwy
713-776-3276
VA McLean
California Computer Products Inc
1487 Chain Bridge Rd
703-442-8404
WA Bellevue
California Computer Products Inc
13401 Bellevue-Redmond Rd
206-641-1925
ALBERTA, CANADA
Calgary
CalComp Canada
315 10 Ave SE
403-261-3720
ONTARIO, CANADA
Rexdale
CalComp Canada
55 Westmore Dr
416-745-9610

Want to receive announce-
ments of new products?
Turn to **UpDate Service Card,**
page 201.

ONTARIO, CANADA

Ottawa
CalComp Canada
120 Hwy 15
613-820-8463

QUEBEC, CANADA

St Laurent
CalComp Canada
100 Alexis Nihon Blvd
514-744-6455

ARGENTINA

Buenos Aires
Electronica del Atlantico SRL
Sarmiento 1630
351201/359242

AUSTRALIA

Artarmon
Datamatic Pty Ltd
60/40 Dickson Ave
433-333

BOLIVIA

La Paz
Latindata Bolivia LTDA
Casilla 1811
323669/328786

BRAZIL

Sao Paulo
DataCal Equipamentos
Avenida Ibirapvera 3383
611552

CHILE

Santiago
Latindata LTDA
Holanda 1310
42209/460205

COLOMBIA

Bogota
Procalculo SA
Carrera 7 #74-09
2350388/2350155

DENMARK

Copenhagen
BLT Agenturer A/S
G1 Koge Landevej 55
161-100

ECUADOR

Quito
Secor
Casilla A-4744

ENGLAND

Bracknell, Berks
CalComp Ltd
The Ring
50211

FINLAND

Helsinki
O Y Mercantile A R
Linnanrakentajantie 4
780322

FRANCE

Paris
CalComp SA
43 rue Breche-Aux-Loups
344-1507

GERMANY, WEST

Dusseldorf
CalComp GmbH
Werfstrasse 37
501193

GREECE

Athens
Infodata Computer Sys Ltd
5 Konari St
642-1368

HONG KONG

Hong Kong
Dataprep Ltd
Watsons Estate-N Point
5-717213

INDIA

Ahmedabad
Industrial Electronic Instr
30 NBK Society:Ellis Bridge
79-281

ISRAEL

Tel Aviv
Eastronics Ltd
11 Rozanis St
475151

ITALY

Milan
CalComp SpA
Via Farnesse 1
4983341

JAPAN

Minato-ku-Tokyo
CalComp Pacific Inc
3-5-27 Roppongi
03-585-7101

KOREA REP (REP)

Seoul
Oriental Computer Eng
CPO Box 289
265-7265

MALAYSIA FED OF

Kuala Lumpur
Dataprep Ltd
Jalan Ampang
488122

NETHERLANDS

Amstelveen
CalComp BV
Maalderij 21
457-351

NORWAY

Oslo
Morgenstjerne & Co A/S
Kongshellegate 3
356110

SPAIN

Alcorcon
Hispano Electronica SA
Apartado de Correos 48
6194108

SWEDEN

Vaxholm
Saven Data
Strandgatan 3
764-31580

SWITZERLAND

Winkel bei Buelach
CalComp GmbH
Buelhofstrasse 360
8607935

CALIFORNIA INSTRUMENTS, DIV OF
NORLIN INDUSTRIES

5150 Convoy St
San Diego, CA 92111
714-279-8620
Contact: Darrell Burrow
■ Products & Services
Electrical-parameters test equipment
Power supplies
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AL Huntsville
Saber Assoc
800-327-8998

AZ Scottsdale
Williams Assoc
602-947-4297

CA Los Altos
Jay Stone & Assoc
415-948-4563

CA Inglewood
Basic Systems Corp
213-673-4300

CA San Diego
Basic Systems Corp
714-268-8000

CO Denver
Williams Assoc
303-373-4730

DC Washington DC
Powell-Pendergraph
301-656-4535

FL Pompano Beach
Saber Assoc
800-432-5618

FL Longwood
Saber Assoc
800-432-5618

FL Bradenton
Saber Assoc
800-432-5618

IL Chicago
EIA
312-298-2290

IN Indianapolis
EIA
317-257-7231

KS Shawnee Mission
EIA
913-362-0919

LA Baton Rouge
SESCO-Baton Rouge
504-928-4951

MA Waltham
McBar Assoc
617-890-0233

MN Elk River
Prairie Assoc
612-441-6190

MO Leasburg
EIR
314-895-4100

NJ Cedar Grove
KLS
201-785-4450

NJ Willow Grove
Powell-Pendergraph
215-657-0330

NM Albuquerque
Williams-Assoc
505-255-1638

NY Fayetteville
Martin P Andrews
315-637-3144

NC Raleigh
Saber Assoc
800-327-8998

OH Dayton
Hocker Assoc
513-298-8638

OH North Olmsted
Hocker Assoc
216-734-4433

TX Houston
SESCO-Houston
713-688-9656

TX Dallas
SESCO-Dallas
214-231-9364

UT Salt Lake City
Williams Assoc
801-532-7701

VA Glen Allen
Powell-Pendergraph
804-264-2341

WA Seattle
Datacom
206-285-2525

CALIFORNIA MICROWAVE INC

990 Almanor Ave
Sunnyvale, CA 94086
408-732-4000
Contact: J H Smith
■ Products & Services
Earth stations
Error rate detectors
Technical control centers
Satellite delay compensation units

Branch Sales Offices:

CA Woodland Hills
California Microwave EDO
Box 2800
213-992-8000

CO Aurora
California Microwave
14211 E 4 Ave
303-344-4650

KS Overland Park
California Microwave
9290 Bond
913-492-9460

NJ Ft Lee
California Microwave
1530 Palisade Ave
201-947-0910

CAMBRIDGE TELECOMMUNICATIONS

Five Old Concord Rd
Burlington, MA 01803
617-273-0980
Contact: Greg Burch
■ Products & Services
Concentrators
Front-end processors
Line sharing units
Message switchers
Minicomputers
Modem sharing units
Inverse multiplexers
Multiplexers, statistical (intelligent)
Packet processors
Port selectors
Port sharing units
Remote network processors
Modem eliminators
Protocol analyzers
Network management centers
Technical control centers
DDP systems
Batch terminals
Programmable terminals
Remote job entry terminals
Terminal controllers
Code converters
Computer/communications interfaces
Protocol converters
Switches, data communications, automatic
Data communications consultants
Data communications software,
communications processors vendors

CANDELA ELECTRONICS

926 W Maude Ave
Sunnyvale, CA 94086
408-738-3800
Contact: Rich Barry
■ Products & Services
Concentrators
Automatic answering units
Automatic calling units

CANOGA DATA SYSTEMS

6740 Eton Ave
Canoga Park, CA 91303
213-888-2003
Contact: Richard C McCaskill

■ Products & Services
Multiplexers, time division
Lightwave (fiber optic) systems
Line drivers
Modems, limited distance
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Modem eliminators
MIL 188C adapters
Parallel line extenders
Cables, lightwave (optical fiber)
Computer/communications interfaces

Branch Sales Offices:

AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400

CA Anaheim
Moxon Electronics
1970 S Santa Cruz St
714-635-7600

CA San Diego
Moxon Electronics
9580 Black Mountain Rd
714-578-5760

CA Santa Clara
Moxon Electronics
2376 Walsh Ave
408-727-6491

CA Lodi
Moxon Electronics
312 W Walnut Ave
209-369-1882

CO Denver
BFA Corp
12014 E 46 Ave Campus Six
303-371-2422

CT Stratford
Instruments Dynamics Inc
Foot of Board St
203-378-6019

IL Oak Brook
S J Kopp Assoc Inc
823 Commerce Dr
312-887-1040

MD Bethesda
Bekr Industries
4924 Hampden Ln
301-654-1434

MA Wakefield
Instruments Dynamics Inc
Lakeside Office Pk
617-245-5100

MI Ann Arbor
ARC Assoc
2500 Packard Ave #202
313-973-1133

MN Elk River
Prairie Assoc
16820 Highway 10
612-441-6190

NJ Englewood
Tecnimat
500 Grand Ave
201-569-4200

NM Albuquerque
BFA Corp
3705 Westfield NE
505-292-1212

NM Las Cruces
BFA Corp
532 E Amador
505-523-0601

NY Rochester
RG Engineering
3100 Monroe Ave
716-385-3021

NY Selkirk
RG Engineering
6 Sherbrook Dr
518-439-3070

OH Cleveland
ARC Assoc
21360 Center Ridge Rd
216-333-8375

OH Miamisburg
ARC Assoc
228 Byers Rd
513-859-3040

OK Oklahoma City
Data Marketing Assoc
2401 NW 39 Expwy
405-528-6071

PA Pittsburgh
ARC Assoc
160 N Craig St
412-681-8609

PA Jenkintown
Stein Instrumentation Corp
413 Johnson St
215-885-2370

TX Dallas
Data Marketing Assoc
14235 Proton Rd
214-661-0300

TX Houston
Data Marketing Assoc
3330 Bering Dr
713-780-2511

TX San Antonio
Data Marketing Assoc
833 Isom Rd
512-342-3031

TX Austin
Data Marketing Assoc
300 E Huntland Dr
512-451-5174

UT Salt Lake City
BFA Corp
395 Lawndale Dr
801-466-6522

WA Vancouver
Instrumentation/Control Systems
Inc
Box 587
206-573-5600

WI Waukesha
Prairie Assoc
2913 Devonshire Ct
414-544-1141

BRITISH COLUMBIA, CANADA

Vancouver
Electronic Systems Ltd
1033 Davie St
604-687-5696

ONTARIO, CANADA

Downsview
Electronic Systems Ltd
62 Alness St
416-661-3673

ONTARIO, CANADA

Ottawa
Electronic Systems Ltd
34 Bentley Ave
613-226-1232

QUEBEC, CANADA

Montreal
Electronic Systems Ltd
ESSO Bldg; 3 Place Ville Marie
514-878-1168

JAPAN

Tokyo
Nissho Electronics Corporation
Konwa Bldg; 1-12-22 Tsukiji
Chuo-Ku
(03) 544-8389

SWITZERLAND

Zurich
Kontron Electronic
Bernstrasse Sud 169
01-62-82-82

CAPEX CORP

PO Box 13529
Phoenix, AZ 85002
602-264-7241
Contact: Mike Odell
■ Products & Services
Data communications software, intelligent software houses

Branch Sales Offices:

AR Phoenix
Capex Arizona
4125 N 14 St
602-264-7241
CA Downey
Capex Calif
8221 E Third St
213-862-5102
DC Columbia
Capex DC
2000 Century Plaza
301-596-3335
GA Atlanta
Capex Atlanta
3781 NE Expwy
404-41-8415
IL Hinsdale
Capex Illinois
201 E Ogden
312-986-8618
MA Dedham
Capex Massachusetts
990 Washington St
617-329-6170
NJ Clifton
Capex New Jersey
1136 Clifton Ave
201-472-7000
PA King of Prussia
Capex Pennsylvania
801 Third Ave
215-337-8050
TX Dallas
Capex Texas
12700 Hillcrest Rd
214-386-0907
TX Houston
Capex Texas
13201 Northwest Fwy
713-460-8555

CARDKEY SYSTEMS

20660 Bahama St
Chatsworth, CA 91311
213-998-7560
Contact: Mario Marinaccio
■ Products & Services
Data security devices, personal identification systems

CARTERFONE COMMUNICATIONS CORP

1111 W Mockingbird Lane, Suite 1400
Dallas, TX 75247
214-630-9700
Contact: Charles R Yonker
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed (0-1,200 b/s)
Cassette drives
Disc drives, floppy
Tape punch/reader, paper
Programmable terminals
Teleprinters, impact
Teleprinters, non-impact

Teletypewriters

Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Code converters
Data access arrangement devices
Protocol converters
Data communications software, intelligent terminal vendors
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Los Angeles
Carterfone Comm Corp
16946 Sherman Way
213-342-6540
CA San Francisco
Carterfone Comm Corp
3505 Ryder St
408-245-9200
CA Orange
Carterfone Comm Corp
12812 Garden Grove Blvd
714-534-2510
GA Atlanta
Carterfone Comm Corp
3300 NE Expwy
404-458-5973
IL Rolling Meadows
Carterfone Comm Corp
4300-I Lincoln
312-358-8700
MD Rockville
Carterfone Comm Corp
170 Rollins Av
301-770-6220
MI Oak Park
Carterfone Comm Corp
14600 W Eight Mile Rd
313-967-1503
NY Fairfield
Carterfone Comm Corp
12 Spielman Rd
212-285-9181
NY New York
Carterfone Comm Corp
76 Beaver St
212-285-9181
PA King of Prussia
Carterfone Comm Corp
1000 W 9 Ave
215-337-3900
TX Dallas
Carterfone Comm Corp
2636 Walnut Hill Ln
214-350-1294
WA Seattle
Carterfone Comm Corp
1152 Industry Dr
206-575-1607

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

CENTIGRAM CORP

155A Moffett Pk Dr
Sunnyvale, CA 94086
408-734-3222
Contact: Carl Berney
■ Products & Services
Audio response units
Data entry terminals
Word recognition units
Branch Sales Offices:
CA Sunnyvale
Centigram Corp
155A Moffett Park
408-734-3222

JAPAN

Tokyo
Takachiho Koheki Co Ltd
2, 1-Chome, Yotsuya Shinjuku-ku
03-355-1111

CENTRONICS DATA COMPUTER CORP

One Wall St
Hudson, NH 03051
603-883-0111
Contact: Jack Garrity
■ Products & Services
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Word processors, communicating
Ribbons and supplies for terminals and printers

Branch Sales Offices:

AZ Tempe
Centronics
1730 W 10 Place
602-968-7285
CA Irvine
Centronics
130 McCormick Av
714-979-6650
CA Sunnyvale
Centronics
550 Weddell Dr
408-744-1244
FL Ft Lauderdale
Centronics
1515 NW 167 St
305-620-1521
GA Atlanta
Centronics
3050 Presidential
404-455-8740
IL Arlington Heights
Centronics
738 W Algonquin Rd
312-956-0095
MD Columbia
Centronics
5565 Sterret Place
301-596-3914
MA Woburn
Centronics
260 W Cummings Pk
617-935-6150
NJ Mt Laurel
Centronics
137 Gaither Dr
609-234-8266
NY Plainview
Centronics
88 Sunnyside Blvd
516-349-1963
TX Arlington
Centronics
1900 E Randol Mill Rd
817-461-5711
TX Houston
Centronics
10200 Hempstead
713-688-1455
ONTARIO, CANADA
Mississauga
Hamilton Avnet Elect
3688 Nashua Dr
416-677-7432
ONTARIO, CANADA
Mississauga
Centronics
1225 Arrowood Dr
416-625-0770

ONTARIO, CANADA

Ottawa
Hamilton Avnet Elect
1735 Courtwood Cr
613-226-1700

QUEBEC, CANADA

Dorval
Centronics
765 Lajoie St
514-636-6451

QUEBEC, CANADA

St Laurent
Hamilton Avnet Elect
2670 Paulus St
514-331-6443

EIRE (IRELAND)

Droghda
Centronics Ireland BV
Donore Rd
41-8991

ENGLAND

London
Centronics UK (Ltd)
Petersham House, Harrington Rd
01-581-1011

FRANCE

Paris
Centronics SA
50 Rue Dombasle
828-4051

GERMANY, WEST

Frankfurt
Centronics GmbH
Arabella Center; Lyoner Strasse
44-48
666-1021

ITALY

Milan
Centronics SpA
Via Santa Valeria S
809-516

CENTURY DATA SYSTEMS INC A
XEROX CO

Box 3056
Anaheim, CA 92803
714-632-7500
Contact: Frank Iazzetta
■ Products & Services
Disc drives, large

Branch Sales Offices:

CA Orange
Century Data Systems Inc
571 N Poplar
714-978-0800

CA Santa Clara
Century Data Systems Inc
3375 Scott Blvd
408-727-2833

FL Vero Beach
Century Data Systems Inc
2925 Cardinal Dr
305-567-5700

MA Waltham
Century Data Systems Inc
69 Hickory Dr
617-890-1670

NY Cold Spring Harbor
Century Data Systems Inc
5 Main St
516-367-4101

TX Houston
Century Data Systems Inc
330 N Belt E Box 60012
713-820-2500

TX Dallas
Century Data Systems Inc
13773 N Central Expwy
214-699-1682

DENMARK

2880 Bagsvaerd
Digitek APS
Vadstrupvej 35-NR 5.1
02/440077

ENGLAND

Bracknell Berks
Century Data Systems
Cory House The Ring
0344/50211

FINLAND

0811 Helsinki 81
O Y Mercantile AB
Linnanrakentantie 4
80/780322

FRANCE

Paris
CalComp SA
43 Rue De La Breche-Aux-Loups
345-4974

GERMANY, WEST

Werftstrasse 37
Century Data Systems
4000 Dusseldorf 11
0211/501193

ISRAEL

Haifa
SDSI Ltd
Box 5101
04/661195

ITALY

20146 Milano
Telcom SRL
Via Civitali 75
02/4047648

SWEDEN

16204 Vallingby
Teleinstrument AB
Maltesholmsvaegen 138
08/380370

SWITZERLAND

Usterstrasse 120
Rodata AG
8600 Duebendorf
0411/8201613

Want to receive announcements of
new products? Turn to
UpDate Service Card, page 201.

CERMETEK MICROELECTRONICS INC

1308 Borregas Ave
Sunnyvale, CA 94086
415-734-8150

Contact: George Chao
■ Products & Services

Line drivers
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)

Branch Sales Offices:

AZ Scottsdale
Dar-C

7360 Acoma Dr
602-948-2240

CA Marina del Rey
Relcom
14069 Marquesas Way
213-822-1187

CA Palo Alto
WITC
151 University Av
415-321-1240

IL Chicago
Ed Joiner & Co
6835 W Higgins Ave
312-792-1277

MA Lexington
Kitchen & Kutchin
177 Bedford St
617-862-8230

MN Minneapolis
Jos Co/Melius
6425 Cedar Av
612-861-3343

NM Albuquerque
Tritronix
2403 San Mateo Blvd
505-265-8400

OH Cleveland
Marlow Associates
3645 Warrensville Center Rd
216-991-6500

PA Glenside
Koeber Associates Inc
129 Roslyn Ave
215-887-2310

TX Houston
The Cunningham Co
9440 Old Katy Rd
713-683-7231

CHATSWORTH DATA CORP

20710 Lassen
Chatsworth, CA 91311
213-341-9200
Contact: Frank J Lefkowitz
■ Products & Services
Remote job entry terminals

Branch Sales Offices:

CO Golden
J F Hurlbut
622 Gardenia
303-279-7796

MN Brooklyn Pk
Tele-Terminals
7216 Boone Ave

NY New York
John Walker
Inwood Station
212-899-8200

WA Seattle
Distributed Data Products
1200 Westlake Ave N
206-283-4044

CHESS

955 Bannock St
Denver, CO 80204
303-573-5135

Contact: Bob Willmann
■ Products & Services

Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Acoustic couplers
Lightwave (fiber optic) systems
Line drivers

Modems, limited distance
Modems, multipoint

Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)

Modems, voice-grade, medium speed
(1,800-3,600 b/s)

Modems, voice-grade, high-speed
(4,800-9,600 b/s)

Modem eliminators
Data content monitors

Error rate detectors
Protocol analyzers

Response-time monitors
RTS emulator

Network management centers
Technical control centers

Tape, paper

Tape punch/reader, paper
 Bar code readers
 Batch terminals
 Data entry terminals
 Graphic display terminals
 Programmable terminals
 Interactive terminals
 Portable data entry terminals
 Remote line printers
 Remote job entry terminals
 Teleprinters
 Teleprinters, impact
 Teleprinters, non-impact
 Terminal controllers
 Terminal interfaces
 Video data terminals (KSR)
 Video data terminals (RO)
 Computer/communications interfaces
 Data access arrangement devices
 Furniture, cabinets, terminal enclosures
 Protocol converters
 Selection & transfer equipment, monitor & test switching equipment
 Selection & transfer equipment, patching equipment
 Selection & transfer equipment, reconfiguration equipment
 Switches, data communications, automatic
 Switches, data communications, manual
 Uninterruptible power supplies, line correctors, etc
 Data communications consultants
 Lease and resale organizations
 Maintenance organizations
 Network simulation services
 Teleprocessing monitors

CHROMATICS INC
 2558 Mountain Industrial Blvd
 Tucker, GA 30084
 404-493-7000

Contact: Donald K McKinney

Branch Sales Offices:

AL Huntsville
 Col Ins Co
 205-859-6580
CA Calabasas
 US Graphics Mktg Corp
 213-880-4062
CO Littleton
 Davis & Assoc
 303-795-1400
FL Ft Lauderdale
 Col Ins Co
 800-432-4480
GA Atlanta
 Col Ins Co
 800-327-6600
IL Arlington Hgts
 Dytec/Central Inc
 312-394-3380
IN Indianapolis
 Dytec/Central Inc
 317-247-1316
IA Iowa City
 Dytec/Central Inc
 319-683-2282
KS Lenexa
 Dytec/South
 913-888-0215
ME Framingham
 Bartlett Assoc
 617-879-7530
MD Bethesda
 Bartlett Assoc
 301-656-3061
MI Detroit
 WKM Assoc
 313-588-2300

MN Chan Hassen
 Professional Mktg Corp
 612-934-5939

MO Hazelwood
 Dytec/South Inc
 314-731-5400

NM Albuquerque
 Thorson Co
 505-265-5655

NY White Plains
 Bartlett Assoc
 914-949-6476

NY Holcomb
 Bartlett Assoc
 716-657-6309

OH Cleveland
 WKM Assoc
 216-267-0445

OH Dayton
 WKM Assoc
 513-434-7500

OR Portland
 DPM Inc
 206-453-9082

PA Pittsburgh
 WKM Assoc
 412-892-2953

PA Wayne
 Bartlett Assoc
 215-688-7325

TX Austin
 Thorson Co
 512-451-7527

TX Dallas
 Thorson Co
 214-233-5744

TX Houston
 Thorson Co
 713-771-3504

AUSTRALIA
 Crows Nest NSW
 TCG-439-6477

BELGIUM
 Brussels
 Spesi
 02-37491-12

ENGLAND
 Bournemouth
 Techex Ltd
 0202-293-115

FRANCE
 Techdata
 749-40-37

GERMANY, WEST
 Techdata GmbH
 31025-6

ISRAEL
 Eldan Electronic Instrument Co
 Ltd
 533-221-533-242

JAPAN
 Computers Int'l Japan
 03-402-856

SOUTH AFRICA
 Pretoria
 Infodata Pty Ltd
 01278-8141

SWEDEN
 Teleinstrument AB
 08-380-370

SWITZERLAND
 W Stolz AG
 057-54655

CINCINNATI ELECTRONICS CORP
 2630 Glendale/Milford Rd
 Cincinnati, OH 45241

513-563-6000
 Contact: D C Maxwell Jr

■ **Products & Services**
 Digitized-voice processors
 Line drivers
 Microwave/laser systems
 Infrared systems
 FM systems
 Bar code readers
 Data entry terminals
 Programmable terminals
 Interactive terminals
 Terminal interfaces
 Computer/communications interfaces
 Data security devices, encoder/decoders
 Data security devices, software security modules

Voice digitizers

Branch Sales Offices:

CA Redondo Beach
 R M Wise
 Box 7000-759
 213-377-9872

GA Warner Robins
 J A Howard
 Drawer XX
 912-922-1571

MA Bedford
 R L Erwin Jr
 3 Preston Ct
 617-275-9080

CINCINNATI BELL

307 E 4th St
 Cincinnati, OH 45202
 513-397-3122

Contact: Charles Pettis

■ **Products & Services**
 Telephone companies
 Channel service units
 Digital service units
 Modems, limited distance
 Modems, multipoint
 Modems, multiport
 Modems, voice-grade, low-speed
 (0-1,200 b/s)
 Modems, voice-grade, medium speed
 (1,800-3,600 b/s)
 Modems, voice-grade, high-speed
 (4,800-9,600 b/s)
 Modems, broadband, half-group
 (to 19.2 kb/s)
 Modems, broadband group (to 50 kb/s)
 Disc drives, floppy
 Discs, floppy
 Audio response units
 Bar code readers
 Batch terminals
 Portable data entry terminals
 Remote line printers
 Remote job entry terminals
 Teleprinters, impact
 Teletypewriters
 Terminal controllers
 Video data terminals (KSR)
 Video data terminals (RO)
 Automatic answering units
 Automatic calling units
 Computer/communications interfaces
 Data jacks and plugs
 Pulse and signal regenerators
 Switches, data communications, manual
 Data communications consultants

CINCOM SYSTEMS INC

2300 Montana Av
 Cincinnati, OH 45211
 513-662-2300
 Contact: Dennis Yablonsky
 ■ **Products & Services**
 DDP systems
 Data communications consultants

Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Educational services
Maintenance organizations

Branch Sales Offices:

CA Irvine
Cincom Systems
2151 Michelson Dr
714-955-0771

CO Denver
Cincom Systems
6825 E Tennessee Ave
303-388-2458

FL Coral Gables
Cincom Systems
5915 Ponce De Leon
305-665-0451

GA Decatur
Cincom Systems
4151 Memorial Dr
404-296-5045

IL Des Plaines
Cincom Systems
2200 E Devon
312-297-2280

IA Des Moines
Cincom Systems
1200 35 St
515-223-1987

KS Shawnee Mission
Cincom Systems
10000 W 75 St
913-384-4386

MA Braintree
Cincom Systems
222 Forbes Rd
617-848-7988

MI Southfield
Cincom Systems
17117 W 9 Mile Rd
313-559-5650

MI Grand Rapids
Cincom Systems
3040 Charlevoix Dr
616-942-0982

MO Earth City
Cincom Systems
514 Earth City Plaza
314-291-0400

NY New York
Cincom Systems
501 Madison Av
212-752-3206

OH Cincinnati
Cincom Systems
2300 Montana Ave
513-662-2300

PA Pittsburgh
Cincom Systems
650 Smithfield St
412-232-3410

TX Dallas
Cincom Systems
6350 LBJ Frwy
214-661-0527

VA Fairfax
Cincom Systems
9934 Main St
703-591-1740

ONTARIO, CANADA
Mississauga
Cincom Systems
130 Dundas St E
416-279-4220

AUSTRALIA

Crows Nest
Cincom Systems
220 Pacific Hwy
02-436-1100

BELGIUM

Brussels
Cincom Systems
17-19 Rue Montoyer
32-02-511.65.48

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

C ITOH ELECTRONICS INC

5301 Beethoven St
Los Angeles, CA 90066
213-390-7778
Contact: William Rendall
■ Products & Services
Disc drives, floppy
Video data terminals (KSR)

Branch Sales Offices:

IL Addison
C Itoh Electronics Inc
240 East Lake St
312-941-1310

NY New York
C Itoh Electronics Inc
666 Third Ave
212-682-0420

CLARY CORP

320 W Clary Ave
San Gabriel, CA 91776
213-287-6111
■ Products & Services
Power supplies
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

CA Emeryville
Ingalls Assoc
5915 Christie
415-658-5622

OR Portland
Ingalls Assoc
3511 SE Milwaukie Ave
503-232-7487

TX Houston
L P Spencer & Assoc
Box 12064
713-944-9291

CMC MARKETING CORP

10611 Harwin Dr
Houston, TX 77036
713-995-4960
Contact: Wayne Burnside
■ Products & Services
Minicomputers
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
DDP systems
Local network systems
Database processors
Add-on main memory
Disc drives, floppy
Disc drives, large
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals

Teleprinters

Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Furniture, cabinets, terminal enclosures
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

FL Maitland
CMC Marketing Corp
310 Spring Lake Hills Dr
305-862-1970

TX Houston
CMC Marketing Corp
10611 Harnen
713-995-4960

COASTAL DATA PRODUCTS

7370 NW 36 Ave
Miami, FL 33147
305-696-6800
Contact: Bob Sevick
■ Products & Services
Badge readers
Data entry terminals
Programmable terminals
Remote job entry terminals

Branch Sales Offices:

AL Huntsville
Private Data Systems
500 Wynn Dr
205-837-0777

CA Paramount
Datamation Inc
7625 Rosecrans Ave
213-634-3000

CA S San Francisco
Management Reporting Resources
Inc
220 E Grans
415-952-3400

FL Sarasota
Automation Sciences
1090 S Tamiami Trail
813-366-2821

IL St Charles
Electronic Systems Sales
29 Highgate Ct
312-377-9361

MI Livonia
Cado Systems
31039 Schoolcraft Rd
313-427-4800

NC Charlotte
GLS Inc
6140 Sharon Rd
704-364-5146

OH Lakewood
Bill Gibbons Co
12900 Lake Ave
216-221-1900

PA Reading
Automatic Office Sys
154 N 10 St
215-374-4028

RI Cranston
Technical Aut Bus Sys
689 Atwood Ave
401-944-3681

TX Addison
Corp for Distributed Systems
15840 Addison Rd
214-934-8040

COLOMBIA
Bogota
Coldatos Ltda
Calle 30 A No 6-22

CODEX CORPORATION

20 Cabot Blvd
Mansfield, MA 02048
617-364-2000
Advertising pages 5,34-35
Contact: Dennis Kirshy
■ Products & Services
Front-end processors
Line sharing units
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Multiplexers, group band
Port sharing units
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband group (to 50 kb/s)
MIL 188C adapters
Network management centers
Technical control centers
Programmable terminals
Cables, electrical prefabricated extending
Data access arrangement devices
Data security devices, encoder/decoders
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment

Branch Sales Offices:

CA Inglewood
Codex Corp
11222 La Cienega Blvd
213-641-9342

DC Washington
Codex Corp
1010 Sixteenth St NW
202-223-2990

IL Rosemont
Codex Corp
10600 W Higgins Rd
312-298-0800

MA Dedham
Codex Corp
888 Washington St
617-329-2445

NJ Irvington
Codex Corp
50 Union Av
201-373-6500

TX Dallas
Codex Corp
13531 N Central Expwy
214-690-5221

BELGIUM
Brussels
Codex Europe SA
158 Avenue de Tervuren
02-762.23.51

JAPAN
Tokyo
Codex Far East
Nakamura Bldg 2-8;1-chom
03-355-0432

COHERENT COMMUNICATIONS

60 Commerce Dr
Hauppauge, NY 11787
516-231-1550
Contact: Bertram J Ralph

■ Products & Services

Multiplexers, frequency division
Modems, voice-grade, low-speed
(0-1,200 b/s)
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment

COLUMBIA DATA PRODUCTS

9050 Red Branch Rd
Columbia, MD 21045
301-992-3400
Contact: Karl Yatovitz
■ Products & Services
Cartridge drives
Disc drives, floppy
Floppy disc recorders
Tape punch/reader, paper
Graphic display terminals
Programmable terminals
Interactive terminals
Word processors, communicating
Code converters
Protocol converters

Branch Sales Offices:

AZ Phoenix
Peripherals Inc
6525 N 15 Ave
602-242-7800

CA Santa Clara
Moxon Electronics
2376 Walsh Rd
408-727-6491

CA Anaheim
Moxon Electronics
1970 S Santa Cruz St
714-635-7600

CA San Diego
Moxon Electronics
9580 Black Mountain Rd
714-578-5760

CA Lodi
Moxon Electronics
312 W Walnut Ave
209-369-1883

CO Littleton
Don Davis Assoc
709 W Littleton Blvd
303-795-1400

FL Orlando
Format Inc
2424 Timberlake Dr
305-851-8273

IL Park Ridge
Ad-Tech Inc
701 S Lincoln Ave
312-692-7320

MA Framingham
J M Lancaster Co
125 Irving St
617-875-8893

MI Madison Heights
WKM Assoc Inc
345 W Girard
313-588-2300

MN Eden Prairie
Scientific Devices
7032 Wi-low Creek Rd
612-944-3515

NJ Englewood Cliffs
Scientific Devices East
210 Sylvan Ave
201-871-3916

NC Hendersonville
Goetsch Enterprises
131 Fourth Ave
704-693-0920

OH Cleveland
WKM Assoc Inc
16141 Puritas Ave
216-267-0445

OH Dayton
WKM Assoc Inc
7913 S Suburban Rd
513-434-7500

PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2963

TX Dallas
Data Aids Assoc
2880 LBJ Frwy
214-620-1551

TX Houston
Data Aids Assoc
1440 N Loop
713-862-6685

VA Alex
Dyna-Rep Co
6399 Little RiveR TrnPk
703-354-1222

WA Bellevue
DPM Inc
515 116 Ave
206-453-9082

QUEBEC, CANADA
Brossard
Caleq inc
1445 Provencher #204
514-861-4615

ARGENTINA
Buenos Aires
Industrial Cibernetica SA
Diag R Sanenz Pena 1119

AUSTRALIA
New South Wales
Pacific Communications Ltd
4 Euston St-Rydalmere
02-638-6400

DENMARK
Bagsvaerd
CKI-DATA
Lauretsvej 28
02-98-44-11

ENGLAND
Bournemouth
Data-Type
Unit 23 Elliott Rd

FINLAND
Helsinki
Jertec Oy
Nuijamiestentie 1-3
0-585-133

FRANCE
Paris
Elexo
8 rue Saint Lucie
011-331-930-2880

GERMANY, WEST
Monchengladbach
Ziegler
An Der Waldesruh 17
011-49-2166-80091

MEXICO
Mexico City
Central De Despensas SA
Vicente Guerrero No. 18

NETHERLANDS
Le Schoonhoven
Byte Int'l
Debyelaan 30
01823-3435

SOUTH AFRICA
Johannesburg
KB Sales Co Ltd
Box 260195
011-21-8751

SWEDEN

Stockholm
Datamatrix, AB
Box 106

SWITZERLAND

Zurich
Max Meier
Norastrasse 5
01-54-21-21

COM/TECH SYSTEMS

505 Eighth Ave
New York, NY 10018
212-594-5377
Contact: Carl M Mengani
■ Products & Services
Modem eliminators
Electrical-parameters test equipment
Error rate detectors
RTS emulator
Terminal interfaces
Code converters
Data security devices, encoder/decoders
Data communications consultants

Branch Sales Offices:

- CA Santa Ana
Knott Engineering
1949 La Cuesta Dr
714-838-9289
- MI Gaithersburg
The Wright Co
19104 Rhodes Way
301-840-1928
- MN Minneapolis
Deerland Dist
2021 E Hennepin Ave
612-331-6433
- NJ Harrington Pk
Glasgal Comm Serv
103 First St
201-768-8082
- NY New York
Glasgal Comm Serv
521 Fifth Ave
212-687-2455
- NY Hauppauge
Datadyne Corp
185 Oser Ave
516-231-7741
- PA Coopersburg
Pleasant Valley Assoc
RD1 Box 405
215-346-8684
- ONTARIO, CANADA
Ottawa
Louis Albert Assoc
2264 Stevenage Dr
613-737-5941

COMARK CORP

257 Crescent St
Waltham, MA 02154
617-894-7000
Contact: William Breen
■ Products & Services
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Programmable terminals
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

- CA Orange
Comark Corp
4302 E Walnut Ave
- MD Silver Spring
Source Assoc
10300 Naglee Rd
301-431-0587

MN Edina

Integrated Peripheral Syst
4901 W 77 St
612-831-0349

TX

Houston
Dyna Marketing
7707 Sunbonnet
713-937-0278

COMDATA CORP

8115 N Monticello
Skokie, IL 60076
312-677-3900
Contact: Philip Towle
■ Products & Services
Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Cassettes
Cassette drives
Disc drives, floppy
Tape, paper
Tape punch/reader, paper
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Data access arrangement devices

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

COMDESIGN INC

340 S Kellogg, Ste A
Goleta, CA 93017
805-964-9852
Advertising page 42
Contact: John D Markel
■ Products & Services
Concentrators
Front-end processors
Multiplexers, statistical (intelligent)
Packet processors
Computer/communications interfaces
Data communications consultants

Branch Sales Offices:

- AZ Tempe
Qualtech
610 W Broadway #201
602-967-4655
- CA Los Angeles
Mark Assoc
8921 S Sepulveda
213-641-1840
- CA San Jose
Telemark
826 N Winchester
408-246-9616
- CO Evergreen
Westek Data Prod
Box 1355
303-674-5255
- CT Stratford
Instruments Dynamics
Foot of Broad St
203-378-6019

IL Skokie

Mar-Con Assoc
4836 Main St
312-675-6450

MD

Rockville
J-4 Systems
50 W Montgomery
301-424-4144

MI

Center Line
Dietrich & Assoc
7200 E 10 Mile Rd
313-754-6450

NM

Albuquerque
Qualtech
130 Louisiana NE
505-255-6100

NY

Plainview
TRAC Assoc
88 Sunnyside Blvd
516-349-7664

OH

Cleveland
Dietrich & Assoc
1276 W Third St
216-781-1855

OH

Dayton
Dietrich & Assoc
333 W First St
513-223-6042

PA

Pittsburgh
Dietrich & Assoc
90 Clairton Blvd
412-892-2992

PA

Ambler
Denco Data Equipment
25 Skippack Pk
215-542-9876

COMM-PRO ASSOC

638 14 St
Manhattan Beach, CA 90266
213-376-1344

Contact: S F Dubow

■ Products & Services
Data communications consultants
Data communications software, independent
software houses

Branch Sales Offices:

- CA Manhattan Beach
Comm-Pro Assoc
350 N Sepulveda Blvd
213-376-3694

COMMTEX INC

2411 Crofton La
Crofton, MD 21114
301-721-3666

Contact: Don Parker

■ Products & Services

Concentrators
Message switchers
Multiplexers, statistical (intelligent)
Remote network processors
Modems, multipoint
Data content monitors
Protocol analyzers
Response-time monitors
Network management centers
Technical control centers
DDP systems
Local network systems
Programmable terminals
Terminal controllers
Computer/communications interfaces
Protocol converters
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors

COMMUNICATIONS INTERFACE INC

PO Box 2320; Loop Station
Minneapolis, MN 55402
507-663-0087

Contact: Judd Kirklin

■ **Products & Services**

Disc drives, large
Tape, magnetic
Tape drives, magnetic
Data entry terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Word recognition units
Word processors, communicating
Computer/communications interfaces
Protocol converters
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
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Data communications software, intelligent
terminal vendors
Used equipment

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202-554-6224

Contact: George A Lawler

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Telephone companies

COMPRE COMM INC

51 E Chester
Champaign, IL 61820
217-352-2477

Advertising page 44

Contact: Russell A Straayer

■ **Products & Services**

Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Modem eliminators
Cables, electrical prefabricated extending
Computer/communications interfaces

Branch Sales Offices:

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Peripherals Inc
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CA Sunnyvale
Inter-Link Systems
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408-744-1930

FL Boca Raton
Network Orange
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MN Eden Prairie
Scientific Devices
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612-944-3515

MO St Louis

Atech
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Mecom Inc
7033 Sandusky Co
419-457-3231

PA Media

S & S Klinetics
9 West 3rd St
215-565-5388

TX Dallas

SCI Sales Inc
16990 Dallas Pkwy
214-931-1487

TX Houston

SCI Sales Inc
1199 NASA Road 1
713-488-3725

WA Seattle

Ben/Dav
3204 NE 123rd St
206-367-3437

COMPRESSION LABS INC

10440 N Tantau Ave
Cupertino, CA 95014
408-725-0206

Contact: Cloyd Marvin

■ **Products & Services**

Message switchers
Remote network processors
Parallel line extenders
Video data terminals (KSR)
Data compression devices
Data communications consultants

Branch Sales Offices:

CA Carson
Compression Labs Inc
550 Carson Plaza Dr
213-538-5184

CA San Francisco
Compression Labs Inc
605 Market St
415-777-5463

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Compression Labs Inc
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408-725-0202

NY NY

Compression Labs Inc
405 Lexington Ave
212-986-1836

COMPUTEK INC

63 Second Ave
Burlington, MA 01803
617-272-8100

Contact: James G McCauley

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Data entry terminals
Graphic display terminals
Programmable terminals
Teleprinters, impact

Branch Sales Offices:

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CompuTek Inc
10600 W Higgins Rd
312-297-7359

MD Bethesda

CompuTek Inc
4720 Montgomery Ln
301-656-7388

NJ Princeton

CompuTek Inc
Box C216
609-799-1111

COMPUTER AUTOMATION**NAKED MINI DIV**

1865 Von Karman
Irvine, CA 92713
714-833-8830

Contact: Frank Kirchhoff

■ **Products & Services**

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Minicomputers
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Programmable terminals
Interactive terminals
Teletypewriters
Video data terminals (KSR)
Computer/communications interfaces
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

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Computer Automation
59 Brookhollow Dr
714-546-9550

CA Santa Clara
Computer Automation
3218 Scott Blvd
408-727-6800

FL Orlando
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999 Woodcock Rd
305-896-1440

GA Atlanta
Computer Automation
3781 Northeast Epwy
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Computer Automation
1060 North Tower Ln
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Automation Belgique
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Yrel Electronique et
Informatique
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956-8142

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Box 652
020-802802

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Box 2630
499-197

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Box 31352
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Untere Bahnhofstr 19
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page 5

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2610 Columbia St
Torrance, CA 90503
213-320-9101
Advertising page 41
Contact: R L Cole
■ Products & Services
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Front-end processors
Message switchers
Local network systems
Data entry terminals
Programmable terminals
Terminal controllers

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Computer Communications Inc
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416-492-9808

COMPUTER DATACOM INC
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Irvine, CA 92714
714-540-6327
Contact: Neil Gleason
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Modems, voice-grade, medium speed
(1,800-3,600 b/s)
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Tape, magnetic
Ribbons and supplies for terminals and
printers

COMPUTER DEVICES INC
25 North Ave
Burlington, MA 01803
617-273-1550
Contact: Donald R Cadieux
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Bar code readers
Batch terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote job entry terminals
Teleprinters, non-impact
Teletypewriters
Word processors, communicating

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Flex-Comm International
Box 4530
205-533-3165

AZ Phoenix
Computer Peripheral Sales
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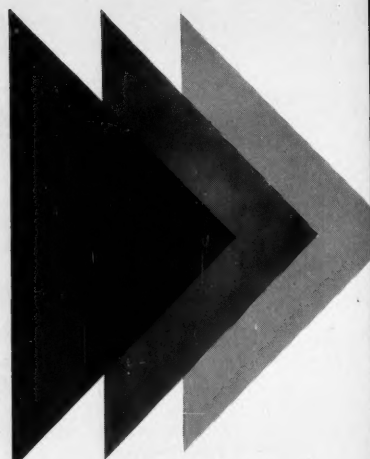
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- NY New York City
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513-433-2800
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503-641-6644
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214-630-5815
- TX Houston
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713-780-9097
- TX El Paso
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BFA Corporation
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801-466-6522
- VA Alexandria
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Toronto
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416-787-1208
- COMPUTER-LINK CORP
40 Ray Ave
Burlington, MA 01803
617-272-7400
Contact: E P Brandeis
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38A Georgiana St
01-267-5195
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Carson, CA 90749
213-515-6566
Contact: Robert M Miller
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Power Distribution-Regulation
Uninterruptible power supplies, line
correctors, etc
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El Segundo, CA 90245
213-678-0311
Contact: Vincent R Grillo Jr
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Database processors
Switches, data communications, automatic
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
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Maintenance organizations
Network simulation services
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415-433-4000
- CA El Segundo
Economic Models Ltd
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213-678-0311
- CA El Segundo
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650 N Sepulveda Blvd
213-678-0311
- CA El Segundo
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220 Continental Blvd
213-678-0311
- CA Los Angeles
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6701 S Sepulveda Blvd
213-649-2660
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213-254-4313
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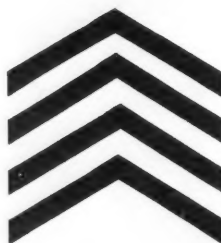
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Data Systems Marketing
1864 South State St
801-487-8281

VA Alexandria
CTSI/Bill Russell Federal
Agencies
6431 Patience Ct
703-922-9347

VA Richmond
Computer Compliments Inc
12124 Gardengate Rd
804-774-4925

WA Bothell
Data Systems Marketing
10412 Beardslee Blvd
206-487-3571

WI Brookfield
Delta Communications Inc
14640 W Greenfield
414-784-3663

COMPUTING DEVICES DIV
CONTROL DATA CORP
PO Box 858
Ottawa, ON K1G3M9
613-596-3810
Contact: G M Mount
■ Products & Services
Front-end processors
Minicomputers
Portable data entry terminals
Fire detection/protection equipment

COMPUTROL CORP
15 Ethan Allen Highway
Ridgefield, CT 06877
203-544-9371
Contact: Garry Stephens
■ Products & Services
Multiplexers, time division
Modems, limited distance
Modems, broadband, super-group
(to 230.4 kb/s)
Local network systems
Computer/communications interfaces
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA Mt View
Eakins Associates Inc
999 Independence Ave
415-969-4533

CA Santa Ana
Knott Engineering
1949 La Cuesta Dr
714-838-9289

IN Columbus
Eastern IA Miltronics
3809 Colonial Dr
812-376-6321

WA Bellevue
Showalter Inst Inc
1521 130th Ave NE
206-455-4922

ONTARIO, CANADA
Toronto
Transduction Ltd
Box 167 Station M

ENGLAND
Reading Berkshire
Data Translation Ltd
Gecko House; Sutton Park Ind
Estate
0734-669335

GERMANY, WEST
AdenauerstraBe 9
Stemmer Elektronik
8031 Puchheim
089 80 60 61

COMSHARE INC

3001 S State St
Ann Arbor, MI 48106
313-994-4800
Contact: Donald J Walker
■ Products & Services
Timesharing/service bureaus

Branch Sales Offices:

AZ Phoenix
Comshare Inc
2224 W Desert Cove
602-997-9671

CA Los Angeles
Comshare Inc
700 Flower St
213-629-5551

CA San Francisco
Comshare Inc
Spear St Tower 1
415-777-2100

GA Atlanta
Comshare Inc
875 Johnson Ferry Rd NE
404-252-8911

IL Chicago
Comshare Inc
222 S Riverside Plaza
312-648-0910

IL Des Plaines
Comshare Inc
701 Lee St
312-298-9630

MA Wellesley
Comshare Inc
60 William St
617-235-3650

MI Southfield
Comshare Inc
17117 W Nine Mile Rd
313-559-1400

MN St Louis Pk
Comshare Inc
Shelard Tower
612-546-3556

MO Clayton
Comshare Inc
7777 Bonhomme
314-862-7212

NY New York
Comshare Inc
1114 Ave of the Americas
212-398-6800

NC Charlotte
Comshare Inc
One NCNB Plaza
704-373-0361

OH Cincinnati
Comshare Inc
Fifth and Race Tower
513-421-5020

OH Cleveland
Comshare Inc
1300 East Ninth St
216-687-0460

PA Bala-Cynwyd
Comshare Inc
111 Presidential Blvd
215-835-6644

PA Philadelphia
Comshare Inc
1700 Market St
215-564-3404

PA Pittsburgh
Comshare Inc
Five Gateway Center
412-355-0540

TX Bellaire
Comshare Inc
656 W Loop South
713-667-2727

TX Dallas
Comshare Inc
4099 McEwen
214-387-0171

VA Arlington
Comshare Inc
1745 Jefferson Davis Hwy
703-979-0990

ONTARIO, CANADA
Rexdale
Comshare Inc
230 Galaxy Blvd
416-675-6363

BELGIUM
Brussels
Comshare Inc
Tweckerkenstraat; 7 Rue des Deux
Eglises
02 230-85-45

ENGLAND
London
Comshare Inc
32-34 Great Peter St
01-222-5665

GERMANY, WEST
Cologne
Comshare Inc
Quatermarkt 5
0221-210897

JAPAN
Tokyo
Comshare Inc
5-4-14 Tsukiji Chuo-Ku
03-542-8681

NETHERLANDS
The Hague
Comshare Inc
Koninginnegracht 56; 2514 AE
070-46-93-57

COMTAL CORP

Box 5087
Pasadena, CA 91107
213-797-1175
Contact: Harvey Raider
■ Products & Services
DDP systems
Database processors
Graphic display terminals
Programmable terminals
Interactive terminals
Computer/communications interfaces
Data communications software,
communications processors vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

AZ Phoenix
Peripherals Inc
6252 N 15th Ave
602-242-7800

FL Port St Lucie
Remtek South East Inc
728 Degan Dr
305-878-9379

MD Rockville
TelFree Associates
414 Hungerford Dr
301-340-7337

NJ Upper Montclair
Computer Marketing Inc
530 Valley Rd
201-746-8668

TX El Paso
D B M Associates
419 Balboa Rd
915-584-1795

COMTEC INFORMATION SYSTEMS INC

53 John St
Cumberland, RI 02864
401-724-8500
Contact: Glenn F Bowgren
■ Products & Services
Bar code readers
Batch terminals
Data entry terminals
Programmable terminals
Remote job entry terminals
Data access arrangement devices

Branch Sales Offices:

MA Newton Highlands
Butler Assoc
82 Winchester St
617-965-1080

NJ Sterling
Bristol Data Products Corp
1390 Valley Rd
201-647-2362

PA Dresher
J Fishman & Assoc
1645 Dublin Rd
215-646-3666

CONCORD CONSULTING GROUP

191 Sudbury Rd
Concord, MA 01742
617-369-8744
Contact: Michael J Lydon
■ Products & Services
Data communications consultants

CONRAC CORP

DATA PRODUCTS DEPT
600 N Rimsdale
Covina, CA 91722
213-966-3511
Contact: John McClimont
■ Products & Services
Graphic display terminals

Branch Sales Offices:

CA Covina
Conrac Div
600 N Rimsdale
213-966-3511

GERMANY, WEST

Weikersheim
Conrac GmbH
Industriestrasse 18
07934-675

CONTINENTAL RESOURCES INC

175 Middlesex Turnpike
Bedford, MA 01730
617-275-0850
Contact: Robert L Hahn
■ Products & Services
Acoustic couplers
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Data content monitors
Cassettes
Disc drives, floppy
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Automatic answering units
Cables, electrical prefabricated extending
Computer/communications interfaces
Paper for terminals
Pulse and signal regenerators
Ribbons and supplies for terminals and
printers
Selection & transfer equipment, monitor &
test switching equipment
Data communications consultants
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Santa Clara
Continental Resources
2344 Walsh Ave
408-249-9870

CA Carson
Continental Resources
1134 Dominguez St
213-638-0454

IL Bensenville
Continental Resources
1090 Tower Ln
312-860-5991

MD Gaithersburg
Continental Resources
16021 Industrial Dr
301-948-4310

MA Bedford
Continental Resources
175 Middlesex Tpke
617-275-0850

NJ Scotch Plains
Continental Resources
847 Jerusalem Rd
201-654-6900

NJ Moorestown
Continental Resources
304 Harper Dr
609-234-5100

NY New York
Continental Resources
One Penn Plaza
212-695-3206

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

CONTROL DATA CORP

Box O, HQN111
Minneapolis, MN 55440
612-853-7600
Contact: C H Neal
■ Products & Services
Front-end processors
Message switchers
DDP systems
Local network systems
Database processors
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Batch terminals
Graphic display terminals
Remote line printers
Video data terminals (KSR)
Ribbons and supplies for terminals and
printers
Data communications consultants
Educational services
Maintenance organizations
Timesharing/service bureaus

CONTROL LASER CORP

11222 Astronaut Blvd
Orlando, FL 32809
305-851-2540
Contact: J Fitzgerald
■ Products & Services
Microwave/laser systems
Data security devices, personal
identification systems

Branch Sales Offices:

CA Santa Clara
Northwest Pacific Region
3350 Scott Blvd
408-988-5355

CA Oceanside
Southwest Pacific Region
4046 Vista Calaveras
714-726-2412

FL Orlando
Southeast Region
11222 Astronaut Blvd
305-851-2540

NJ Edison
Enmark Associates
14 Irene Court
201-754-5115

NJ River Edge
Enmark Associates
657 Bogert Rd
201-967-1800

CONVERGENT TECHNOLOGIES

2500 Augustine Dr
Santa Clara, CA 95051
408-727-8830
■ Products & Services
Minicomputers
DDP systems
Local network systems

CONVERSATIONAL SYSTEMS CORP

132 W 31 St
New York, NY 10001
212-244-6100
Contact: Aric Rosenbach
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
DDP systems
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

CORNING GLASS WORKS

TELECOMMUNICATIONS PROD DEPT

Houghton Park
Corning, NY 14830
607-974-8812
Contact: T E Dunne
■ Products & Services
Lightwave (fiber optic) systems

S H COUCH CO

225 Patterson St
Tecumseh, MI 49286
517-423-7466
Contact: David J Manning
■ Products & Services
Fire detection/protection equipment

CPT CORP

8100 Mitchell Rd
Eden Prairie, MN 55344
612-937-80100
Contact: Robert Gallagher
■ Products & Services
Word processors, communicating

CRAIG DATA CABLE

PO Box 5192; 154 Post Rd E
Westport, CT 06881
1-800-243-5066
Contact: Mike Fratesi
■ Products & Services
EIA cable testers
Cables, electrical prefabricated extending
Computer/communications interfaces
Data jacks and plugs

Branch Sales Offices:

CT Stamford
Craig Data Cable Sales
652 Glenbrook Rd
203-356-9315

CRC SYSTEMS INC

4020 Williamsburg Ct
Fairfax, VA 22032
703-385-0440
Contact: Robert A Ryan
■ Products & Services
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Educational services
Network simulation services
Teleprocessing monitors

CREATIVE COMPUTING

PO Box 789-M
Morristown, NJ 07960
201-540-0445
Contact: Bill Baumann

■ Products & Services
Data communications consultants
Data communications software, independent software houses
Educational services

Branch Sales Offices:

CA Burlingame
Jules E Thompson Co
1290 Howard Ave
414-348-8222

IL Wilmette
Ted Rickard
435 Locust Rd
312-251-2541

MA Cohasset
Cel Associates
36 Sohler St
617-383-6136

NY Hastings on Hudson
Nelson & Miller Co.
55 Scenic Dr
914-478-0491

NY NY
Paul McGinnis Co
60 E 42nd St
212-490-1021

CROWN COMMUNICATIONS INC

2750 Northaven Rd
Dallas, TX 75229
214-243-6941

Contact: Joel M Stephens

■ Products & Services

Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Programmable terminals
Teleprinters
Teleprinters, impact
Word processors, communicating
Lease and resale organizations
Timesharing/service bureaus

Branch Sales Offices:

MD Gaithersburg
Computer Resources Inc
963 Cooper Rd A-1
301-840-1010

OK Tulsa
Gordon Holmes & Assoc
2825 E Skelly Dr
918-749-6823

ONTARIO, CANADA

Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

CSPI

40 Linnell Circle
Billerica, MA 01821
617-272-6020
Contact: E Arsenault
■ Products & Services
Front-end processors
Minicomputers
Digitized-voice processors
DDP systems
Add-on main memory

Branch Sales Offices:

AZ Scottsdale
Mar-Tech Assoc
8702 E Rancho Vista Dr
602-994-1285

CA Redondo Beach
Pacific Computer Marketing
Box 700-453
213-519-0679

CA W Lake Village
Pacific Computer Marketing
32129 Lindero Canyon Rd
213-889-2532

CA LeMesa
CSPI Inc
8380 Hercules St
714-464-1692

CO Littleton
DAPEC
5575 S Sycamore
303-798-6538

FL Stuart
Remtek/Southeast
951 Colorado Ave
305-287-8440

FL Atlanta
GA& Remtek Inc
18 Perimeter Pk
404-455-4705

IL Chicago
Pivan Eng Co
3535 Peterson Ave
312-539-4838

IN Indianapolis
Pivan Eng Co
1259 W 86 St
317-253-1681

IA Cedar Rapids
Pivan Eng Co
204 Collins Rd NE
319-377-4434

KS Shawnee Mission
Pivan Eng Co
5920 Nall
913-722-1030

MD Silverspring
CSPI Inc
8757 Georgia Ave
301-587-6860

MA Billerica
CSPI Inc
40 Linnell Circle
617-272-6020

MI Southfield
COMTEL Instruments Co
21223 Hillstop
313-358-2505

MN Minneapolis
Pivan Eng Co
5100 Edina Industrial Blvd
612-835-3060

MO St Louis
Pivan Eng Co
11734 Lackland Industrial Dr
314-567-3636

NY Rochester
R G Eng
3100 Monroe Ave
716-385-3021

NY Fort Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911

NY E Aurora
R G Engineering
67 Relter Rd
716-655-4322

OH Dayton
COMTEL Instruments Co
Kettering, Box 2036
513-298-7573

PA Ambler
DENCO Inc
25 Skippack Pk
215-542-9876

PA Pittsburgh
COMTEL Instruments Co
4 Pkwy Cntr
412-922-5720

TX Dallas
REMTEK
13500 Midway Rd
214-387-2855

TX Houston
REMTEK
9720 Townpark
713-988-9901; 713-227-2195

VA Rock Creek
REMTEK
1605 Rock Creek Dr
512-255-4103

WI Brookfield
Pivan Eng Co
3055 N Brookfield Rd
414-786-1940

ONTARIO, CANADA

Downsview
APTEC Eng Ltd
4251 Steeles Ave
416-661-9722

ONTARIO, CANADA

Ottawa
APTEC Eng Ltd
85 Albert St
613-232-9193

QUEBEC, CANADA

Montreal
L'INGENIERIE APTEC Ltee
3860 Cote Vertu Rd, Ville St
Laurent
514-337-0227

QUEBEC, CANADA

Delta
APTEC Eng Ltd
Box 1234 Station A
604-943-9326

AUSTRALIA

Crows Nest NSW
Marine-Air Systems Pty Ltd
Box 888
439-5488

EIRE (IRELAND)

Co Neath
Euro Electronic Instruments
32 Brews Hill, Navan
23577 (NAVAN)

ENGLAND

London
Euro Electronic Instruments Ltd
Shirley House, 27 Camden Rd
(1) 267-2748/9

FRANCE

Asnieres
Metrologie
4, Ave Laurent-Cely; La Tour
D'Asnieres
33(1)791 44 44

GERMANY, WEST

Sechholder
Data Logic Computer GmbH
623 Frankfurt/M 80
0611/39204

INDIA

Madras
Indchem Electronics Private Ltd
105 Dr Radhakrishnan Salai; 24
Feirberg St Melacha
848667 22 39 22

ISRAEL

Tel-Aviv
RCM Computers Ltd
20 Merkaz Ba' Alei, Melacha St

ITALY

Milano
Segi
Via Timavo, 12
60 73 184

JAPAN

Tokyo
Kyokuto Boeki Kaisha Ltd
New Otemachi Bldg, 2-1 2 Chome
Otemachi
244-3511

NETHERLANDS

Netherlands
M & S Europe BV
1171 ZL Schiphol Oost
31-020-472467

NEW ZEALAND

Wellington
Marine Safety Ltd
Box 12197, 155-161
720-113

SWEDEN

Solna
Systems Assoc AB
Hagalundsgatan 40
46-8-830980

SWITZERLAND

Geneva
Marli SA
14, rue de l'Ancien Port
(022) 3297-20

Get new product information when it
breaks?

Turn to **UpDate Service Card, page
201.**

CSS TELECOMMUNICATIONS

2680 Bayshore Frontage Rd
Mountain View, CA 94043
415-964-4335
Contact: David D McDonald
■ Products & Services
Concentrators
Modem sharing units
Multiplexers, statistical (intelligent)
Digitized-voice processors
Lightwave (fiber optic) systems
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Protocol analyzers
Response-time monitors
Technical control centers
Code converters
Protocol converters
Data communications consultants

CUBIC CORP

9333 Balboa Ave
San Diego, CA 92123
714-277-6780
Contact: Bill D'Atessio
■ Products & Services
Microfilm equipment, systems and services
Data communications consultants
Data communications software, independent
software houses
Timesharing/service bureaus

CULLINANE CORP

20 William St
Wellesley, MA 02181
617-237-6600
Contact: John J Cullinane
■ Products & Services
Data communications consultants
Data communications software,
communications processors vendors

Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Educational services
Teleprocessing monitors

Branch Sales Offices:

CA El Segundo
Cullinane Corp
888 N Sepulveda Blvd
213-640-2333

CA Palo Alto
Cullinane Corp
2471 E Bayshore Rd
415-856-0100

GA Tucker
Cullinane Corp
2200 Northlake Pkwy; Northlake
Quadrangle
404-491-7700

IL Oak Brook
Cullinane Corp
2809 Butterfield Rd
312-655-1454

MN Minneapolis
Cullinane Corp
508 Foshay Tower
612-341-2646

MO St Louis
Cullinane Corp
111 Westport Plaza
314-434-0887

NJ Denville
Cullinane Corp
75 Bloomfield Ave
201-625-2983

OH Cincinnati
Cullinane Corp
100 Airport Office Pk
606-525-1433

PA West Chester
Cullinane Corp
206 S Deerwood Ln
215-692-8070

PA Philadelphia
Cullinane Corp
Scott Plaza 2
215-521-2324

TX Houston
Cullinane Corp
2900 N Loop W
713-688-7210

ONTARIO, CANADA

Ottawa
Cullinane Corp
864 Lady Ellen Place
613-725-3382

ONTARIO, CANADA

Toronto
Cullinane Corp
920 Yonge St
416-928-0998

QUEBEC, CANADA

Montreal
Cullinane Corp
1010 Sherbrooke St W
514-878-9706

BELGIUM

1160 Bruxelles
Cullinane Benelux
Blvd Souverain 348
32-2-660-09-28

ENGLAND

London
Cullane UK Ltd
Premier House 150 Southampton Rd
01-837-9616

FINLAND

Helsinki 10
Finnsystems Oy
Aleski 15 A
90-177901

FRANCE

Montrouge
Sema Informatique
16-20 Rue Barbes
657-13-00

GERMANY, WEST

Kurt-Schumacher-Strasse 241
Adv/Orga F A Meyer GmbH
D 2940 Wilhelmshaven
04421 8021

ISRAEL

Tel Aviv
Contahal Ltd
83 Gordon St
22 41 15/6

ITALY

Milan
Praxis Calcolo
32 Via Visconti di Modrone
799601

JAPAN

Tokyo 103
Century Research Center Corp
#23-Chome Hon-Cho
663-6401

MEXICO

Mexico 18
Cullinane Mexicana SA de CV
Filadelfia No 119
905-543-8554

SOUTH AFRICA

Randburg 2194 Transv
Computerson Ltd
264 Sanlamsentrum
01148-8334

SWITZERLAND

Zurich
Adv/Orga (Schweiz) GmbH
Mainaustasse 17
0041-1-320270

VENEZUELA

Caracas
T & G Internacional SA
Edif La Linea Apt 21.008
58-2-782-402

CUMMINS-ALLISON CORP
DATA SYSTEMS DIV

2121 Landmeier Rd
Elk Grove Vil, IL 60007
312-364-5800
Contact: Thomas Walsh
■ Products & Services
DDP systems

CUSHMAN ELECTRONICS

2450 N 1st St
San Jose, CA 95131
408-263-8100
Contact: Harris Fuller

Branch Sales Offices:

CA San Leandro
Kennedy Engineering Co
Box 155
415-352-7331

CO

Denver
Linberg Co
6140 East Evans Ave
303-758-9033

DC

Washington
Powell Pendengraph Inc
7979 Old Georgetown Rd
301-656-4535

IL Arlington Heights
Reshal Assoc Inc
219 W University Dr
312-398-7660

MA Concord
Cham-Murray
336 Baker Ave
617-369-8013

MO Cameron
Comm Systems Assoc
520 W Fifth St
816-632-7616

NY N Syracuse
LD Allen
6088 Teft Rd
315-458-7470

NC High Point
EME Inc
112 Buene Viste
919-869-3335

PA Lancaster
Barnhill Brus
429 Nottingham Ave
717-569-7111

TX San Antonio
Repcom Inc
545 Rua de Metta
512-494-6822

WA Bellevue
Arva Hudson Inc
Box 1512
206-455-0773

CUSTOM TERMINALS

225 Oser Avenue
Hauppauge, NY 11787
516-231-3111
Contact: Peter D Colgan
■ Products & Services
Concentrators
Front-end processors
Line sharing units
Message switchers
FM systems
Modems, limited distance
Modem eliminators
MIL 188C adapters
Parallel line extenders
Data content monitors
Protocol analyzers
Local network systems
Electronic mailboxes
Badge readers
Bar code readers
Data entry terminals
Programmable terminals
Portable data entry terminals
Terminal controllers
Terminal interfaces
Code converters
Computer/communications interfaces
Data security devices, encoder/decoders
Error controllers
Protocol converters
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

CYBEREX INC

7171 Industrial Park Blvd
Mentor, OH 44060
216-946-1783
Contact: David C Griffith
■ Products & Services
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AL Birmingham
Crim Sales & Eng Co
Box 58033
205-871-4084

AZ Phoenix
F W Gorman Co
Box 10436
602-956-9820

CA Burlingame
Artwel Electric
Box 1301
415-347-9804

CA Long Beach
Matzinger-Wells
Naples Plaza
213-433-1111

CO Denver
Electrical Agencies Co
121 Mariposa St
303-623-8246

FL Brandon
Jim Meeks & Associates
Box 704
813-689-6137

GA Atlanta
Whitehead Assoc Inc
Box 28662
404-393-0695

IL Mt Prospect
Weldy Lamont Assoc
East NW Hwy
212-398-4510

IL Oak Forest
Weldy Lamont Assoc
Avalon
212-687-3434

IN Munster
Weldy Lamont Assoc
Ridge Rd
219-924-2021

LA Jefferson
General Power & Control Corp
Box 10395
504-733-7340

MD Silver Spring
Bradley Electro Sales
Box 1006
301-587-1866

MD Baltimore
Bradley Electro Sales
Box 6220
301-665-5020

MA Brimfield
E L Flowers & Sons Inc
Wales Rd
413-245-7922

MI Southfield
Engel Klaes Co
Box 281
313-355-1610

MO Kansas City
Cleaves-Bessmer-Marietta
Box 9490, 6303 Evanston

MO St Louis
Gordon Karraker Co
706 Chestnut St
314-231-3666

NY New York
Nepa Inc
7th Av
212-594-3152

NC Charlotte
Robert W Chapman & Co
Box 15415
704-525-2421

NC Greensboro
Robert W Chapman & Co
Box 9743
919-273-1809

NC Raleigh
Robert W Chapman & Co
2315 Myron Dr
919-782-2624

NC Charlotte
Waggoner Verhill Assoc
Box 11401
704-523-5476

OH Cincinnati
Alexander Equipment Co
Box 6276
513-221-7520

OH Cleveland
The Collart Company
Box 16068
216-333-5550

OK Tulsa
Harold Furtney
Box 7081
918-492-6490

OR Tigard
United Sales Assoc
SW Hampton St
503-620-6960

PA Conshohocken
The Electrical Distributors Co
15 E Ridge Pike
215-825-6450

PA Pittsburgh
Waggoner-VerHill Assoc
Laketon Rd
412-241-5202

SC West Columbia
Robert W Chapman & Co
Box 616
803-796-9796

SC Greenville
Robert W Chapman & Co
150 Exec Center

TN Concord
Robert W Chapman & Co
11709 S Williamsburg Dr
615-966-6120

TX Dallas
United Technical Marketing
Box 31070
214-231-5611

VA Roanoke
Bradley Electro Sales
3209 West Ridge Rd SW
703-344-2692

WI Thiensville
Osbon Assoc Inc
108 N Main St
414-242-9120

CYLIX COMMUNICATIONS NETWORK

3000 Directors Row
Memphis, TN 38131
Contact: Bob Howard
■ Products & Services
Satellite carriers
Value-added carriers
Message switchers

DANYL CORP

310 Cooper Ctr; N Park Dr & Browning
Pennsauken, NJ 08109
609-662-6615
Contact: Peter J Truscello
■ Products & Services
Badge readers
Data entry terminals
Remote job entry terminals
Branch Sales Offices:
FL Coral Gables
Control Systems Inc
217 Palermo Ave
305-445-7537

IL Oak Brook
Danyl Data Systems
1301 W 22 St
312-655-1555

TX Kingwood
Transaction Recording Systems
1 Kingwood Pl
713-358-1616

DATA ACCESS SYSTEMS INC

Coles Rd & Camden Ave
Blackwood, NJ 08012
609-228-0700
Advertising page 123
Contact: Howard B Crystal
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
DDP systems
Disc drives, floppy
Graphic display terminals
Programmable terminals
Portable data entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Cables, electrical prefabricated extending
Data access arrangement devices
Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

AZ Phoenix
Data Access Systems Inc
6114 N 13th Pl
602-263-5034

CA Burlingame
Data Access Systems Inc
875 Mahler Rd
415-872-1811

CA Carson
Data Access Systems Inc
950 Dovlen Ave
213-538-4100

CO Englewood
Data Access Systems Inc
7348 S Alton Way
303-741-2922

GA Atlanta
Data Access Systems Inc
4025 Pleasant Dale Rd
404-449-5435

IL Morton Grove
Data Access Systems Inc
8129 N Austin Ave
312-967-0440

MD Lanham
Data Access Systems Inc
4720-C Boston Way
301-459-3560

MA Norwood
Data Access Systems Inc
51 Morgan Dr
617-769-6420

MI Troy
Data Access Systems Inc
1409 Allen Dr
313-589-1855

NJ Parsippany
Data Access Systems Inc
343 New Rd
201-227-8880

NY Fairport
Data Access Systems Inc
850 Fairport Park
716-377-2080

NY New York
Data Access Systems Inc
One Penn Plaza
212-564-9301

OH Cleveland
Data Access Systems Inc
299 Alpha Park
216-473-2131

OH Columbus
Data Access Systems Inc
1046-J Merrimar Circle N
614-274-1581

PA Bala Cynwyd
Data Access Systems Inc
One Bala Cynwyd Plaza
215-667-8315

TX Houston
Data Access Systems Inc
2200-C Central Pkwy
713-682-5965

TX Irving
Data Access Systems Inc
1717 Walnut Hill Lane
214-256-5536

WA Tukwila
Data Access Systems Inc
811 Industry Dr
206-251-5070

Know the product name? Turn
to **Products & Services Direc-**
tory, page 5 to find out who
makes it.

DATABASE DESIGN INC

2395 Huron Pkwy
Ann Arbor, MI 48104
313-971-5363
Contact: David L Bowers
■ Products & Services
DDP systems
Database processors
Data communications software, distributed
data processing system vendors
Educational services

DATA COMMUNICATIONS CORP

3000 Directors Row
Memphis, TN 38131
901-345-3544
Contact: Jim McMahan
■ Products & Services
Packet-switching carriers
Satellite carriers
Concentrators
Front-end processors
Minicomputers
Remote network processors
DDP systems
Local network systems
Database processors
Electronic mailboxes
Data entry terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)
Paper for terminals
Ribbons and supplies for terminals and
printers
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA Fountain Valley
DCC
10061 Talbert Ave
714-963-4994

CO Colorado Springs
DCC
1420 Berglund Rd
303-599-0262

IL Arlington Heights
DCC
415 W Golf Rd
312-640-9630

MA Ashland
DCC
30 Main St
617-875-9789

MI Madison Heights
DCC
356 E Whitcomb
313-588-9185

NY Lake Success
Data Communications Corp
2001 Marcus Ave
516-328-3544

NY New York
DCC
122 E 42nd St
212-661-6837

PA Blue Bell
DCC
1777 Walton Rd
215-643-4881

ENGLAND
London
DCCI
5 Church St, Middlesex
01-892-3685

NETHERLANDS
Amsterdam
SDT-Data Technology bv
Houtman Kade 32-36
020-820-258

DATA COMMUNICATIONS INSTITUTE

1221 Ave of Americas
New York, NY 10020
212-997-3382
Advertising page 147
Contact: Robert Speer
■ Products & Services
Educational services

**DATA CONTROL SYSTEMS
DIV OF GENERAL INDICATOR CORP**

PO Box 860
Danbury, CT 06810
203-743-9241
Advertising page 64
Contact: William S Halpin
■ Products & Services
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, group band
Line drivers
Modems, limited distance
Modems, multipoint
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Modem eliminators
Local network systems
Selection & transfer equipment, monitor &
test switching equipment
Data communications consultants

Branch Sales Offices:

AL Huntsville
Gentry Assoc
2109 W Clinton Ave
205-534-9771

AZ Mesa
Data Systems Marketing
2256 W Catalina Ave
602-833-0061

CA Costa Mesa
Data Systems Marketing
2950 Airway Ave
714-540-2312

CO Denver
Data Systems Marketing
1155 Speer Blvd
303-573-5133

CT Mt Carmel
Scientific Devices
3074 Whitney Ave
203-248-9361

FL Orlando
Gentry Assoc
7527 Currency Dr
305-859-7450

GA Roswell
Gentry Assoc
9800 Grimes Bridge Rd
404-998-2828

IL Des Plaines
Lincoln Hodges & Assoc
3158 Des Plaines Ave
312-297-3810

LA Gretna
Gentry Assoc
1799 Stumpf Blvd
504-367-3975

MD Laytonville
GT Assoc
6501 Griffith Rd
301-949-8060

MA Waltham
Scientific Devices
181 West St
617-890-2252

MI Ann Arbor
Lincoln Hodges & Assoc
201 S Main St
313-995-2155

MO Independence
Engineering Services Comp
2425 S Crysler
816-254-3600

NJ Englewood Cliffs
Scientific Devices
210 Sylvan Ave
201-871-3916

NM Albuquerque
Data Systems Marketing
3620 Wyoming NE
505-294-5790

NY Dewitt
db Associates
3307 Erie Blvd East
315-446-0220

NC Burlington
Gentry Assoc
428 Alamance Rd
919-227-3639

OK Oklahoma City
Data Marketing Assoc
2401 Northwest 39 Expwy
405-528-6071

OR Hillsboro
Data Systems Marketing
910 NW Brookwood
503-640-4883

PA Pittsburgh
Data Systems Marketing
3107 Greenfield Rd
412-486-2676

SC Greenville
Gentry Assoc
Green Gate Park
803-271-9543

TX Dallas
Data Marketing Assoc
14235 Proton Rd
214-661-0300

UT Salt Lake City
Data Systems Marketing
1864 S State St
801-487-8281

WA Bethell
Data Systems Marketing
10412 Beardslee Blvd
206-487-3571

WI Waukesha
Lincoln Hodges & Assoc
217 Wisconsin Ave
414-542-3087

QUEBEC, CANADA
St Lambert
Commetrics Ltd
Box 278
514-672-4534

AUSTRALIA
Vermont, Victoria
Dindima Group
Box 106
03-873-4455

ENGLAND
Middlesex
Data Communications
Division/Aeradio House
Hayes Rd Southall
01-574-2411

FRANCE
Saint Maur
Cemco
16 Avenue Raspail
885-2701

GERMANY, WEST
Muenchen
Testem MBH
Liebigstrasse 12
089-22 24 12

ISRAEL
Bene Baraq
AEL Israel Ltd
7 Jabotinsky St
70411

JAPAN
Tokyo
Chisho Corp
1-8-17 Yaesu Chuo-Ko
03-272-3321

DATA DIMENSIONS INC
50 Washington St
Norwalk, CT 06854
203-053-2290
Contact: Kenneth E Wortz
■ Products & Services
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modem eliminators
Batch terminals
Graphic display terminals

Programmable terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Data access arrangement devices
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Encino
Data Dimensions Inc
15760 Ventura Blvd
213-990-9200

CA San Mateo
Data Dimensions Inc
1670 S Amphlett Blvd
415-349-7262

GA Atlanta
Data Dimensions Inc
2580 Cumberland Pkwy
404-433-2023

IL Glen Ellyn
Data Dimensions Inc
800 Roosevelt Rd
312-858-3770

MO Creve Coeur
Data Dimensions Inc
Creve Coeur Exec Office Pk
314-432-6121

NY New York
Data Dimensions Inc
60 E 42 St
212-687-2030

OH Cincinnati
Data Dimensions Inc
4000 Executive Park Dr
513-769-0680

PA Cherry Hill
Data Dimensions Inc
811 Church Rd
609-662-2833

TX Houston
Data Dimensions Inc
4550 Post Oak Place Dr
713-961-4711

DATA ELECTRONICS INC
10150 Sorrento Valley Rd
San Diego, CA 92121
714-452-7840
Contact: W G Lynn
■ Products & Services
Cartridges
Cartridge drives
Tape drives, magnetic

Branch Sales Offices:

AL Huntsville
Gentry Assoc
2109 W Clinton Ave
205-534-9771

AZ Scottsdale
Thorson Desert States Inc
6560 N Scottsdale Rd
602-998-2444

CA Irvine
Data Electronics Inc
19752 MacArthur Blvd
714-752-0659

CA Sunnyvale
Data Electronics Inc
510 Lawrence Expwy
408-739-7882

CA San Diego
Gemini Assoc
4236 Balboa Ave
714-270-0088

CA Alhambra
The Thorson Co
624-A N Garfield Ave
213-281-2280

CA Goleta
The Thorson Co
340 S Kellogg Ave
805-964-8751

CA Irvine
The Thorson Co
18009 Skypark Cir
714-557-4460

CA Los Angeles
The Thorson Co
520 S Sepulveda Blvd
213-476-1241

CO Denver
Thorson Rocky Mountain Inc
7076 S Alton Way
303-779-0666

FL Stuart
Remtek Inc
951 Colorado Ave
305-287-8440

GA Roswell
Gentry Assoc
9800 Grimes Bridge Rd
404-998-2828

IL Northbrook
MTA Marketch Assoc
3677 Woodhead Dr
312-291-1220

MD Wheaton
Data Systems Marketing
11141 Georgia Ave
301-933-0900

MA Acton
R D Stout Assoc
75 Great Rd
617-263-1128

MN St Paul
Dytec North Inc
1821 University
612-645-5816

NH Nashua
Data Electronics Inc
125 E Dunstable Rd
603-888-6262

NJ Fort Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911

NC Burlington
Gentry Assoc
428 Alamance Rd
919-227-3639

PA King of Prussia
Rivco January Inc
Box 338
215-265-5211

SC Greenville
Gentry Assoc
Greengate Pk
803-271-8543

TX Dallas
Remtek
13500 Midway Rd
214-387-2855

TX Houston
Remtek
9720 Town Park
713-227-2195

UT Salt Lake City
Thorson Rocky Mountain Inc
3691 West 1987 S
801-973-7969

WA Bellevue
Olson Ferree & Assoc Inc
12727 Notheast 20
206-883-7792

DATA EQUIPMENT INC
238 Caribbean Dr
Sunnyvale, CA 94086
408-734-5610
Contact: Peter R Cotton
■ Products & Services
Telephone companies
Modems, voice-grade, low-speed
(0-1,200 b/s)
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Graphic display terminals
Interactive terminals
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and
printers
Data communications software, independent
software houses
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA San Francisco
Inst of Economic Analysis
44 Montgomery St
415-421-6021

CA Los Angeles
Opexton Business Mach Inc
1625 W Olympic Blvd
213-380-4603

CA Newport Bch
Beerbower & Assoc
1801 A W Bay Ave
714-631-6776

CA Laguna Bch
Universal Microcommunication Sys
Corp
295 Dolphin Way
714-497-5245

IL Springfield
Inst for Comp Analysis & Fin
Evaluation
Highland Dr
217-544-5312

NM Albuquerque
Duke City Typewriter Co
1325 NE San Mateo Blvd
505-265-8347

Get new product information when it
breaks?
Turn to **UpDate Service Card, page
201.**

DATA GENERAL CORPORATION

4400 Computer Drive
Westboro, MA 01581
617-366-8911
Contact: Frank Keaney
■ Products & Services
Minicomputers
Packet processors
Remote network processors
DDP systems
Local network systems
Database processors
Add-on main memory
Cartridges

Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Batch terminals
Data entry terminals
Digital plotters
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters
Teleprinters, impact
Teletypewriters
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Paper for terminals
Power supplies
Ribbons and supplies for terminals and
printers
Switches, data communications, automatic
Switches, data communications, manual
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations

Branch Sales Offices:

AL Birmingham
Data General Corp
90 Bagby Dr
205-942-3730

AZ Phoenix
Data General Corp
1950 E Watkins
602-254-6412

AZ Tucson
Data General Corp
4633 E Broadway
602-327-6811

AR Little Rock
Data General Corp
6 and McKinley
501-664-7075

CA El Segundo
Data General Corp
2221 Rosecrans Ave
213-973-0401

CA Van Nuys
Data General Corp
7011 Hayvenhurst Ave
213-787-8870

CA Santa Barbara
Data General Corp
5266 Hollister Ave
805-967-5544

CA Santa Ana
Data General Corp
1220 Village Way
714-558-9421

CA San Diego
Data General Corp
4305 Gesner St
714-276-8450

CA	Palo Alto Data General Corp 2445 Faber Pl 415-321-8010	MA	Worcester Data General Corp Mechanics Bank Tower 617-754-3096	OH	Brooklyn Heights Data General Corp 709 Brookpark Rd 216-459-2300
CA	Fresno Data General Corp 5108 E Clinton Way 209-251-5027	MI	Southfield Data General Corp 16900 W Eight Mile Rd 313-569-0200	OH	Dayton Data General Corp 1161 Lyons Rd 513-435-1932
CA	San Francisco Data General Corp 120 Howard St 415-543-6730	MN	Richfield Data General Corp 1600 E 78th St 612-866-3005	OH	Columbus Data General Corp 6161 Busch Blvd 614-436-0951
CA	Sacramento Data General Corp 4031 North Freeway Blvd 916-920-3434	MO	Kansas City Data General Corp 4520 Madison Ave 816-531-1326	OK	Oklahoma City Data General Corp 6161 N May Ave 409-840-3891
CO	Englewood Data General Corp 8455 E Prentice Ave 303-773-2620	MO	St Louis Data General Corp 11854 Lackland Rd 314-567-4820	OK	Tulsa Data General Corp 9726 East 42 S 918-664-8530
CT	Bradford Data General Corp 50 Shaw Rd 203-484-2771	MT	Billings Data General Corp 17 Roundup Dr 406-652-1782	OR	Portland Data General Corp 4614 SW Kelly 503-223-7150
FL	Orlando Data General Corp 6880 Lake Ellenor Dr 305-851-8230	NE	Omaha Data General Corp 7000 W Center Rd 402-392-2521	PA	Blue Bell Data General Corp 1777 Walton Rd 215-643-5515
FL	Ft Lauderdale Data General Corp 1001 NW 62 St 305-771-0784	NV	Las Vegas Data General Corp 3355 Spring Mtn Rd 702-876-0663	PA	Carnegie Data General Corp 600 Bell Ave 412-279-3500
FL	Tampa Data General Corp 5444 Bay Center Dr 813-879-2515	NH	Nashua Data General Corp 491 Amherst St 603-889-8524	RI	Rumford Data General Corp 225 Newman Ave 401-438-0001
GA	Atlanta Data General Corp 1639 Tullie Circle 404-325-3181	NJ	Wayne Data General Corp 30 Galesi Dr 201-785-3910	SC	Columbia Data General Corp 240 Stoneridge Dr 803-798-6510
GA	Norcross Data General Corp 6855 Jimmy Carter Blvd 404-448-6072	NY	New York Data General Corp 144 E 44 St 212-557-1122	TN	Memphis Data General Corp 1355 Lynnfield Rd 909-761-3366
ID	Boise Data General Corp 130 South Cole Rd 208-375-6510	NY	Rochester Data General Corp 625 Panorama Trail 716-385-2000	TN	Knoxville Data General Corp 1515 E Magnolia Ave 615-524-1841
IL	Schaumburg Data General Corp 1111 Plaza Dr 312-885-0505	NY	Newfield Data General Corp L141 Meadowbrook Ct 607-272-9440	TX	El Paso Data General Corp 1605 Beech Pl 915-778-6601
IL	Peoria Data General Corp 2524 W Farrelly Ave SW of Rt 150 & Glen 309-688-2224	NY	Liverpool Data General Corp 290 Elwood David Rd 315-451-5440	TX	Dallas Data General Corp 4450 Sigma Rd 214-233-4496
IN	Indianapolis Data General Corp 2421 Production Dr 317-248-8306	NY	Buffalo Data General Corp 3527 Harlem Rd 716-835-3710	TX	Ft Worth Data General Corp 5608 Malvey Ave 817-732-6441
KY	Louisville Data General Corp 4229 Bardstown Rd 502-491-6595	NY	Latham Data General Corp 12 Avis Dr 518-783-3101	TX	Houston Data General Corp 4949 W 34 St 713-688-8641
LA	Baton Rouge Data General Corp 8211 Goodwood Blvd 504-923-0660	NY	Melville Data General Corp 150 Broad Hollow Rd 516-427-0311	TX	Austin Data General Corp 111 W Anderson La 512-458-4201
MD	Baltimore Data General Corp 1900 Sulphur Spring Rd 301-247-8900	NY	White Plains Data General Corp 6 Corporate Park Dr 944-694-1410	UT	Salt Lake City Data General Corp 3644 W 2100 S 801-972-1338
MA	Wellesley Data General Corp 888 Worcester Rd 617-235-8171	NC	Greensboro Data General Corp 405 Parkway Dr 919-378-9401	VA	McLean Data General Corp 1757 Old Meadow Rd 703-827-9600
		NC	Charlotte Data General Corp 5950 Fairview Rd 704-554-8600	VA	Richmond Data General Corp 5001 W Broad St 804-288-1675

VA Norfolk
Data General Corp
5 Koger Exec Center
804-461-0933

VA Salem
Data General Corp
417 Apersen Rd
703-389-8155

WA Kirkland
Data General Corp
10604 NE 38 Pl
206-827-0503

WV Charleston
Data General Corp
723 Kanawha Blvd E

WI West Allis
Data General Corp
10533 W National Ave; Suite 300
414-327-6811

ALBERTA, CANADA
Calgary
Data General Corp
6325 12 St SE
403-253-8427

ALBERTA, CANADA
Edmonton
Data General Corp
124 St
403-482-3443

BRITISH COLUMBIA, CANADA
Richmond
Data General Corp
10250 Shellbridge Way
604-273-2711

ONTARIO, CANADA
Toronto
Data General Corp
415 Horner Ave
416-259-4271

ONTARIO, CANADA
Ottawa
Data General Corp
210 Gladstone Ave
613-563-1121

QUEBEC, CANADA
Ville St Laurent
Data General Corp
438 Isabey
514-342-5730

AUSTRALIA
Melbourne, Victoria
Data General Australian Pty Ltd
30-32 Ellingworth Parade
03-890633

AUSTRIA
Wien
Data General Gesellschaft MBH
Ferkorngasse 2
222-62-61-46

BELGIUM
Brussels
NV Data General SA
Blvd du Souverain 191-197
02-660-49-44

BRAZIL
Sao Paulo
Data General Ltda
Rua Georgia 221
543-0138

DENMARK
Copenhagen
Data General A/S
Sjaellandsboen 2
1-30-56-66

ENGLAND
Greenford, Middlesex
Data General Ltd
320 Ruislip Road East
1-578-9231

FRANCE
Paris
Data General Europe
61 Rue de Courcelles
766-51-78

FRANCE
Le Plessis Robinson
Data General France
La Boursidicre, Immeuble M BP
78; Rt Nationale 186
1-630-21-05

GERMANY, WEST
Eschborn
Data General GMBH
Frankfurter Allee 27
06196

GREECE
Athens
Data General Greece
260 Syngrou Ave
952-0557

ITALY
Milan
Data General SPA
Det Gracchi 36; 20092 Ciniselo,
Balsamo
38-2-61-88

NETHERLANDS
Rijswijk
Data General Holland BV
Van Gijnstraat 17
70-907-694

SWEDEN
Stockholm
Data General Sweden AB
Industrivagen 20; 48 Solna
8-83-44-00

SWITZERLAND
Zurich
Data General AG
Neugasse 247
41-1-44-03-55

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

DATAGRAPHIX INC
Box 82449
San Diego, CA 92138
714-291-9960
Contact: Rich Steele
■ Products & Services
Disc drives, large
Tape drives, magnetic
Interactive terminals
Teleprinters, non-impact
Microfilm equipment, systems and services

Branch Sales Offices:

CA Los Angeles
DatagraphiX Inc
2934 Wilshire Blvd
213-828-5621

CA Oakland
DatagraphiX Inc
8477 Enterprise Way
415-562-9074

GA Atlanta
DatagraphiX Inc
2400 Perimeter Center E
404-394-4814

IL Oak Brook
DatagraphiX Inc
2222 Camden Ct
312-920-5350

MD Bethesda
DatagraphiX Inc
4550 Montgomery Ave
301-654-5228

MA Lexington
DatagraphiX Inc
1050 Waltham St
617-861-7930

MN Bloomington
DatagraphiX Inc
2850 Metro Dr
612-854-2984

NY New York
DatagraphiX Inc
One Rockefeller Plaza
212-765-4930

OH Rocky River
DatagraphiX Inc
20950 Center Ridge Rd
216-333-5311

TX Dallas
DatagraphiX Inc
4240 Sigma Rd
214-386-7003

BELGIUM
Bruxelles
DatagraphiX SA
Avenue Lloyd George 7
640-1616

ENGLAND
Maidenhead
DatagraphiX Int'l Support
Shoppenhangers Rd
Maidenhead 32255

ENGLAND
Windsor
DatagraphiX Ltd
Drift Rd
Std 03447

FRANCE
Paris
DatagraphiX SARL
72-74 Quai de la Loire
1-200-22-22

GERMANY, WEST
Wiesbaden
DatagraphiX GmbH
Abraham Lincolnstrasse 28
700085

NETHERLANDS
Hilversum
DatagraphiX Nederland
Cooheornstraat 71
830854

DATAGRAPHIX INC/DISPLAY DEPT
Box 82449
San Diego, CA 92138
714-291-9960
Contact: J W Woodfill
■ Products & Services
Interactive terminals
Video data terminals (KSR)

Branch Sales Offices:

AL Huntsville
FM Associates
Box 1368
205-536-9990

CA San Diego
DatagraphiX Inc
Box 82449
714-291-9960

CA Fountain Valley
MQI Computer Products
18381 Bandilier Cir
714-751-2005

CA Mountain View
MQI Computer Products
2615 Miller Ave
415-948-8961

CO Denver
PAR Associates
10515 East 40th Ave
303-371-4140

CT Southbury
J J Wild Inc
Box 342
203-264-9494

FL Orlando
FM Associates
Box 13705
305-851-5710

FL Jupiter
FM Associates
Box 996
305-746-2996

GA Atlanta
FM Associates
Box 9901
404-451-2293

IL Oak Brook
DatagraphiX Inc
2222 Camden Ct
312-920-5350

KS Lenexa
Dytec South
8245 Nieman Rd
913-888-0215

MD Rockville
TelFree Associates
414 Hungerford Dr
301-340-7337

MA Needham
J J Wild Inc
570 Hillside Ave
617-444-2366

MI Brighton
Lowry and Associates Inc
8163 W Grand River
313-227-7067

MI Grand Rapids
Lowry and Associates Inc
3902 Costa NE
616-363-9839

MN Chanhassen
Professional Marketing Services
Box 58
612-474-5939

MO Hazelwood
Dytec South Inc
320 Brooks Dr
314-731-5400

NH Merrimack
J J Wild Inc
Box 594
603-424-4717

NM Albuquerque
PAR South Inc
2610 San Mateo NE
505-881-5000

NY Jericho
DatagraphiX Inc
366 Broadway
516-935-2020

NY Pittsford
J Cameron Associates
One Grove St
716-385-1681

NC Ramseur
FM Associates
Box 156
919-824-2196

OH Cleveland
Lowry and Associates Inc
1440 Snow Rd
216-398-0506

OH Dayton
Lowry and Associates Inc
2194 Hewitt Ave
513-435-7684

PA Pittsburgh
Lowry and Associates Inc
Seven Parkway Center
412-922-5110

PA Harleysville
P B Lotz Associates
500 Main St
215-256-6588

TX Houston
Peripheral Products Corp
5401 Mitchelldale
713-681-8558

WA Bellevue
Hamilton Associates
2050 112th NE
206-455-2155

ENGLAND Maidenhead
DatagraphiX Inc
Maidenhead Eurocrest
Shoppenhangers Rd
0628-32255

DATA I/O CORP
PO Box 308
Issaquah, WA 98027
455-3990
Contact: Paul R Lachance

DATAMEDIA CORP
7300 N Crescent Blvd
Pennsauken, NJ 08110
609-665-2382
Contact: M Ervin
■ Products & Services
DDP systems
Programmable terminals
Portable data entry terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Los Angeles
Datamedia Corp
5456 McConnell Ave
213-397-3556

MD Gaithersburg
Datamedia Corp
19516 Clubhouse Rd
301-948-1670

MA Wellesley
Datamedia Corp
148 Linden St
617-235-5028

MN Arden Hills
Datamedia Corp
3585 Lexington Ave N
612-483-0858

NY Pennsauken
Datamedia Corp
7300 N Crescent Blvd
609-665-2382

TX Houston
Datamedia Corp
4801 Woodway Dr
713-871-0320

DATAMETRICS CORP
7630 Gloria Ave
Van Nuys, CA 91406
213-989-3840
Contact: R Douglas Shute
■ Products & Services
Digital plotters
Remote line printers
Teleprinters
Teleprinters, non-impact
Paper for terminals
Power supplies

Branch Sales Offices:

FL Orlando
Truex Associates
4804 S Orange Ave
305-859-2160

MN Wayzata
Dorwart Peripherals
2700 Urbandale Way
612-473-9242

NJ Eatontown
Burkhard Associates
273 Wall St
201-222-4480

NY Ft Solanga
Data Logic Sales
16 Juliet La
516-757-3330

GERMANY, WEST Munchen
Technitron GmbH
Martin Luther Strabe 20

DATA PLUS INC
7205E Lockport Place
Lorton, VA 22079
703-550-7914
Contact: Scott W Buell
■ Products & Services
Port sharing units
Terminal controllers
Automatic answering units
Computer/communications interfaces
Protocol converters
Switches, data communications, automatic

DATAPoint CORPORATION
9725 Datapoint Dr
San Antonio, TX 78284
512-699-7151
Contact: Sales Office
■ Products & Services
Value-added carriers
Minicomputers
Infrared systems
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
DDP systems
Local network systems
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Automatic answering units
Automatic calling units
Computer/communications interfaces
Protocol converters
Switches, data communications, automatic
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Educational services
Maintenance organizations

Branch Sales Offices:

AL Birmingham
Datapoint Corp
205-252-0623

AZ Phoenix
Datapoint Corp
602-273-6223

CA	Irvine Datapoint Corp 714-752-9073	MO	Kansas City Datapoint Corp 816-474-2160	WA	Seattle Datapoint Corp 206-455-2044
CA	Los Angeles Datapoint Corp 213-385-0395	MO	St Louis Datapoint Corp 314-878-6595	WI	Milwaukee Datapoint Corp 414-453-1425
CA	San Francisco Datapoint Corp 415-398-2888	NJ	New Jersey Datapoint Corp 201-368-0070	QUEBEC, CANADA	Toronto TRW Data Systems 416-492-7400
CA	Oakland Datapoint Corp 415-562-5612	NY	Albany Datapoint Corp 518-459-7781	ARGENTINA	Buenos Aires Mapex Srl 34-0213
CA	Sacramento Datapoint Corp 916-920-8743	NY	New York Datapoint Corp 212-971-9270	AUSTRALIA	Sydney Sigma Data Corporation 02-922-3100
CA	San Mateo Datapoint Corp 415-572-1360	NY	Rochester Datapoint Corp 716-248-2616	AUSTRIA	Vienna TRW International Services 222 65 4796
CA	San Diego Datapoint Corp 714-280-1484	NC	Charlotte Datapoint Corp 704-527-5300	BELGIUM	Brussels SAIT Electronics 02-376-2030
CO	Denver Datapoint Corp 303-321-8286	NC	Greensboro Datapoint Corp 919-299-8401	BRAZIL	Rio de Janeiro TRW Computadores 21-222-6795
CT	East Hartford Datapoint Corp 203-289-9364	OH	Cincinnati Datapoint Corp 513-984-5057	DENMARK	Ballerup DP Computers 2 65 23 66
CT	Stamford Datapoint Corp 203-359-4175	OH	Cleveland Datapoint Corp 216-351-1775	ENGLAND	London Ventek 1 903-6261
DC	Washington Datapoint Corp 703-841-7600	OH	Columbus Datapoint Corp 614-890-7686	FINLAND	Helsinki Oy Nokia 661991
FL	Miami Datapoint Corp 305-621-4335	OH	Toledo Datapoint Corp 419-474-5766	FRANCE	Paris MATRA Informatique 1-687-31-24
FL	Orlando Datapoint Corp 305-896-1940	OK	Oklahoma City Datapoint Corp 405-942-8714	GERMANY, WEST	Hannover GIER Electronics 0511-67971
FL	Tampa Datapoint Corp 813-879-8216	OK	Tulsa Datapoint Corp 918-664-2295	GREECE	Piraeus CHERMA Electronics 1-4123471
FL	Jacksonville Datapoint Corp 904-264-6935	OR	Portland Datapoint Corp 503-644-5575	HONG KONG	Hong Kong ODS Computers (Lib) Inc. 5-243-121
GA	Atlanta Datapoint Corp 404-325-2212	PA	Philadelphia Datapoint Corp 215-667-9477	ISRAEL	Tel Aviv IS Information Systems 03-483261
HI	Honolulu Datapoint Corp 808-833-2110	PA	Pittsburgh Datapoint Corp 412-788-4440	ITALY	Milan ENCODER 02-659-7041
IL	Chicago Datapoint Corp 312-977-1470	SC	Charleston Datapoint Corp 803-571-1653	JAPAN	Tokyo CJK Co. Ltd 3-264-6131
IL	Des Plaines Datapoint Corp 312-298-1240	TN	Memphis Datapoint Corp 901-761-3080	MALAYSIA FED OF	Kuala Lumpur Oriental Data Systems 927366
IN	Indianapolis Datapoint Corp 317-299-4253	TN	Nashville Datapoint Corp 615-361-5981	MEXICO	Mexico City Kronos Computacion Y Teleproceso SA 905 540-6720
IA	Des Moines Datapoint Corp 515-225-9070	TX	Dallas Datapoint Corp 214-661-5536		
KY	Louisville Datapoint Corp 502-893-2531	TX	Houston Datapoint Corp 713-680-2200		
LA	New Orleans Datapoint Corp 504-831-8101	TX	San Antonio Datapoint Corp 512-734-8982		
MA	Boston Datapoint Corp 617-890-0440	TX	Ft Worth Datapoint Corp 817-457-9050		
MI	Detroit Datapoint Corp 313-855-2900	UT	Salt Lake City Datapoint Corp 801-262-2915		
MN	Minneapolis Datapoint Corp 612-854-4054				

For further catalog information, turn to
UpDate Service Card, page 201.

NETHERLANDS

Rotterdam
RC Regnecentralen
10-1820 29455

NEW ZEALAND

Auckland
Sigma Data Corp
9 50-4099

NORTHERN IRELAND

Dublin
CARA Data Processing
1 783 166

NORWAY

Oslo
A/S SCANIPS
02-35780

PHILIPPINES

Mikati Rizal
Applied Systems
2 877-294

PORTUGAL

Lisbon
GEEG Computadores LDA
351 562-459

SINGAPORE

Singapore
Oriental Data Systems
915 822

SOUTH AFRICA

Johannesburg
Computer Sciences
11 28-1150

SPAIN

Madrid
Datacom Ibeica SA
247-4705

SWEDEN

Hagersten
Nokia AB Elektronik
8-744-5300

SWITZERLAND

Zurich
TRW International
01-545646

TAIWAN

Taipei
EDP Taiwan Inc
2-768114

THAILAND

Bangkok
ODS United Co Ltd
2825689

VENEZUELA

Caracas
Data SA
2 213-386

DATA PRINTER CORP

99 Middlesex St
Malden, MA 02148
617-321-2400
Contact: John Henry
■ Products & Services
Batch terminals
Remote line printers

Branch Sales Offices:

CA Santa Ana
Data Printer Corp
3877 S Main St
714-557-6582

CA Sunnyvale
Data Printer Corp
1225 Tiros Way
408-739-4310

MA Melrose
Data Printer Corp
141 Pleasant St
617-662-2166

TX Dallas
The Thorson Company
4445 Alpha Rd
214-233-5744

DATAPRODUCTS CORPORATION

6200 Canoga Ave
Woodland Hills, CA 91365
213-887-8000
Contact: Robert Lawrence
■ Products & Services
Remote line printers
Teleprinters, impact
Teleprinters, non-impact
Word processors, communicating
Ribbons and supplies for terminals and printers

Branch Sales Offices:

CA Irvine
Dataproducts
19772 MacArthur Blvd
714-752-7411

CA Santa Clara
Dataproducts
3301 Olcott St
408-727-9900

CA Irvine
Dataproducts
17426 Daimler Ave
714-540-4756

CA Chatsworth
Dataproducts
20327 Nordhoff St
213-882-0530

CT Wallingford
Dataproducts
Barnes Park N
203-265-7151

FL Sunrise
Dataproducts
7770 W Oakland Park Blvd
305-748-7788

MA Wellesley Hills
Dataproducts
36 Washington St
617-237-4711

MI Rochester
Dataproducts
155 Romeo Rd
313-652-1134

MN Minneapolis
Dataproducts
4940 Viking Dr
612-835-2066

NJ Lanoka Harbor
Dataproducts
Lanlac 1, Hwy 9
609-693-2021

PA Wayne
Dataproducts
999 Old Eagle School Rd
215-293-1810

TX Richardson
Dataproducts
777 S Central Expwy
214-231-2240

VA Arlington
Dataproducts
2341 Jefferson Davis Hwy
703-979-8822

PUERTO RICO
Ponce
Dataproducts
PO Box 7728
809-844-0618

AUSTRIA
Vienna
Dataproducts Handels GmbH
Hintere Zollantsstrasse
43-222-753452

EIRE (IRELAND)

Dublin
Dataproducts Ltd
Greencastle Rd Coolock
353-1-474-855

ENGLAND

Reading
Dataproducts Ltd
31/39 South St
44-734-585723

FRANCE

Rungis Cedex
Dataproducts Int'l Inc
1 Rue de la Tour
331-687-1707

GERMANY, WEST

New Isenberg
Dataproducts Int'l
Frankfurter Strasse 172-176
01-6102-3205

HONG KONG

Kwung Tong, Kowloon
Dataproducts Ltd
95 How-Ming St
852-3-430-231

DATAPRODUCTS NEW ENGLAND

Barnes Park North
Wallingford, CT 06492
203-265-7151
Contact: Joseph Flaherty
■ Products & Services
Multiplexers, time division
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
MIL 188C adapters
Data content monitors
Error rate detectors
Protocol analyzers
Network management centers
Technical control centers
Data entry terminals
Interactive terminals
Remote line printers
Teleprinters
Data security devices, encoder/decoders
Selection & transfer equipment, monitor & test switching equipment

Branch Sales Offices:

CA Los Alamitos
X-On Data Inc
10915 Bloomfield St
213-431-4865

FL Melbourne
EME III Inc
1495 N Harbor City Blvd
305-259-2711

GA Decatur
EME II Inc
2522 Tanglewood Rd
404-325-0165

NC High Point
EME Inc
112 Buena Vista
919-869-3335

VA Williamsburg
EME IV Inc
107 Richneck Rd
804-229-5108

DATARAM CORP

Princeton Rd
Cranbury, NJ 08512
609-799-0071
Contact: John F Gilligan
■ Products & Services
Add-on main memory

Branch Sales Offices:

AL Hunstville
Col-Ins-Co
Box 4028
205-881-9512

CA Fountain Valley
MQI Computer Products
18381 Bandilier Cr
714-964-4722

CA Mountain View
Thorson W
625 Ellis St
415-964-9300

FL Orlando
Col-Ins-Co
Box 13189
305-423-7615

FL Coral Springs
Col-Ins-Co
Box 8827
800-432-4480

GA Clarkston
Col-Ins-Co
Box 559
800-327-6600

IL North Brook
Marketch
3677 Woodhead Dr
312-291-1220

LA Baton Rouge
Col-Ins-Co
11814 Coursey Blvd
800-327-6600

MD Gaithersburg
Technical Sales Assoc
19544 Club House Rd
301-258-9790

NJ Ft Lee
Technical Marketing Assoc
2460 Lemoine Av
201-224-6911

NJ Haddonfield
Williams Associates
805 Hopkins Rd
609-428-6060

NM Albuquerque
Thorson Desert States
1101 Cardenas NE
505-265-5655

NY Rochester
RG Engineering
3100 Monroe Av
716-385-3021

NC Winston-Salem
Col-Ins-Co
Box 11607
800-327-6600

TX Houston
Thorson SW
6633 Hillcroft
713-771-3504

TX Dallas
Thorson SW
4445 Alpha Rd
214-233-5744

TX Austin
The Thorson Co
300 E Huntland Dr
512-451-7527

ONTARIO, CANADA
Rexdale Ont
Ahearn & Soper Ltd
31 Enterprise Rd
416-245-4848

AUSTRALIA
Victoria
Anderson Digital Equip
1 Expo Ct
03-543-2077

ENGLAND

Reading
Sintrom Ellinor Ltd
14 Arkwright Rd
0734-85464

FINLAND
Helsinki
Systek Oy
Aleksis Kiven Katu 3
09-737-233

FRANCE
B P 40-78530 Buc
YREL
Z I Rue Fourny
956-81-42

GERMANY, WEST
Leinfelderstrasse
OEM-Elektronik GmbH
7023 Echterdingen
711 79 80 47

INDIA
Ahmedabad
Industrial Electronic Inst
30 NBK Society, Ellis-Bridge
79281

ISRAEL
Tel Aviv
Minix Computers & Systems Ltd
76 Hachashonaim St
03-298783

ITALY
20125 Milano
ESE srl Electronic Systems
Via Villa Mirabello 6
39 607 3626

JAPAN
Tokyo
Matsushita Elec Trading Co Ltd
4-1, 2-Chome, Hamamatsu-cho;
Minato-Ku
03-435-4501

JAPAN
Osaka
Matsushita Elec Trading Co Ltd
Box 288
06-204-5111

NETHERLANDS
Schiphol Ap East
Technitron bv
Bldg 70 Box 7542
020-458755

POLAND
00950 Warszawa
Unitronex Corp
Intraco Building UL Stawki 2
39 6218

SWEDEN
Vallingby
M Stenhardt AB
Box 331
08-739-00-50

SWITZERLAND
Schlieren
ADCOMP AG
Steinwiesenstrasse 3
01/730-48-48

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

DATA RENTALS/SALES INC

Box 3257
Culver City, CA 90230
213-559-3822
Contact: Steven Beaver
■ Products & Services
Acoustic couplers
Line drivers

Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Floppy disc recorders
Data entry terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Automatic answering units
Data access arrangement devices
Lease and resale organizations
Used equipment

Branch Sales Offices:

CA Redwood City
Data Rentals/Sales Inc
2603 Middlefield Rd
415-364-4384

FL Tarpon Springs
Data Rentals/Sales Inc
711B Klosterman Rd
813-934-0829

DATAROYAL
235 Main Dunstable Rd
Nashua, NH 03061
603-883-4157
Contact: Shirley Biron
■ Products & Services
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Word recognition units
Word processors, communicating

Branch Sales Offices:

CA Tustin
Dataroyal
160 Centennial Way
714-838-4530

FL Orlando
W A Brown Instruments
Box 513
305-425-5505

IL Chicago
Data Electronics Co
4976 N Milwaukee Av
312-283-0300

MA Instrument Dynamics
Lakeside Office Park
617-245-5100

MI Brighton
Lowry Assoc
135 W North St
313-227-7067

NJ Fort Lee
TMA
2460 Lemoine Av
201-224-6911

NY North Syracuse
NACO
Box 276
315-699-2651

NY New York
Kanematsu-Gosho
One World Trade Center

OH Dayton
Dataroyal
2801 Far Hills Ave
513-294-6426

PA King of Prussia
J E Cuesta & Co
570 W DeKalb Pike
215-265-5800

TX Dallas
The Thorson Co
4445 Alpha Rd
214-233-5744

AUSTRALIA
Sydney
System One Pty Ltd
255 Pitt St

SWEDEN
Stockholm
Facit Data Products
S-105 45
011-46-8738-7330#

DATA SET CABLE CO INC

722 Danbury Rd
Ridgefield, CT 06877
203-438-9684
Contact: Jim Asketh
■ Products & Services
Line drivers
Modems, limited distance
Modem eliminators
EIA cable testers
Technical control centers
Cables, electrical prefabricated extending
Computer/communications interfaces
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Switches, data communications, manual

Branch Sales Offices:

CT Georgetown
RSA
4 Old Mill Rd
203-544-8300

FL Orlando
FM Assoc
Box 13705
305-851-5710

GA Marietta
Rothchild Comm Corp
2926 Kodack Ct
404-977-1600

MD Silver Spring
Carwithen Assoc
1400 Spring St
301-589-9040

NV Las Vegas
Data Set Cable Co
3001 Contract Ave
702-382-6777

NJ Ringwood
Aras Enterprises Inc
91 Miller Ln
201-728-9443

NY Great Neck
Harvey J Krasner Assoc
33 Great Neck Rd
516-487-0690

TX Dallas
Computer Assoc
8383 Stemmons
214-634-1320

DATA SPECIALTIES INC

3455 Commercial Av
Northbrook, IL 60062
312-564-1800
Contact: Leon M Pierhal
■ Products & Services
Tape, paper
Tape punch/reader, paper
Teleprinters
Protocol converters

Branch Sales Offices:

CT Guilford
R H Sturdy Co Inc
32 Horseshoe Rd
203-453-5424

MD Ellicott City
Scientific Assoc Inc
8730 Town & Country Blvd
301-321-1411

MA Wellesley Hills
R H Sturdy Co Inc
167 Worcester St
617-235-2330

NH Windham
R H Sturdy Co Inc
8 Birchwood Rd
603-893-9506

NJ Cherry Hill
Scientific Assoc Inc
496 N Kings Hwy
609-482-0059

VA Fairfax
Fairfax
Scientific Assoc Inc
9512A Lee Highway
703-385-0600

DATA STREAM COMMUNICATIONS INC

555 Ellis St
Mountain View, CA 94043
415-965-9911
Contact: Robert Robinson
■ Products & Services
Front-end processors
Modem sharing units
RTS emulator
Terminal controllers
Code converters
Protocol converters

DATASWITCH

Landmark Square
Norwalk, CT 06851
203-853-3330
Contact: Jack Gaffney
■ Products & Services
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic

Branch Sales Offices:

CA Riverside
Western Region
6956 Indiana St
714-781-7780

CT Norwalk
Eastern Region
Landmark Square
203-853-3330

IL Oak Brook
Midwest Region
1301 W 22nd St
312-986-1997

DATA TERMINALS & COMMUNICATIONS

590 Division St
Campbell, CA 95008
408-378-1112
Contact: Betts Cartwright
■ Products & Services
Acoustic couplers
DDP systems
Cartridges
Cartridge drives
Disc drives, floppy

Disc drives, large
Data entry terminals
Programmable terminals
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Automatic answering units
Automatic calling units

Branch Sales Offices:

CA Los Angeles
Data Terminals & Communications
1725 W 6 #303
213-483-6878

DC Silver Spring
Data Terminals & Communications
2600 Pittman Dr
301-589-5570

DATA WEST CORP

7333 E Helm Dr
Scottsdale, AZ 85260
602-948-3280
Contact: David J Long
■ Products & Services
Database processors

DATEC INC

300 East Main St
Carrboro, NC 27510
919-929-2135
Contact: Robert Rutt
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)

Branch Sales Offices:

AK Juneau
Capital Office
Box 529
907-586-2830

CA Santa Barbara
Dataquip Corp
Box 3337
805-687-2111

CA Anaheim
Moxon Electronics
1440 So State College Blvd
714-635-7600

CO Englewood
Barnhill Three Inc
7076 S Alton Way
303-779-3600

DC Gaithersburg
Mesa
16021 Industrial Dr
301-948-4350

FL Miami Lakes
Networks Inc
14560 NW 60 Ave
305-822-6750

FL Pinecastle
Vevtec Inc
Box 13947
800-432-2911

GA Norcross
Atlanta Minicomputer
150 Technology Park
404-448-0900

GA Atlanta
Ethom Assoc
3445 Peachtree Rd NE
404-231-2396

GA Decatur
Terminal Equip Maint
316 Church St
404-373-5761

MA Danvers
J Melanson & Assoc
39 Pine St
617-774-1220

MO Hazelwood
Precision Data Products Inc
358 Brooks Dr
314-731-2310

NJ Wharton
ADL Entrps
Richard Mine Rd
201-328-1300

NY Herkimer
Annese & Assoc Inc
Box 127
315-895-7469

NY Massapequa
L E Walz & Assoc Inc
128 Rumson Rd
516-738-3119

NC Charlotte
GLS Inc
6140 Sharon Rd
704-364-5146

NC Raleigh
Distributed Data
100 E Six Forks Rd
919-782-6020

TN Knoxville
Elcom
723 Suited Calahan Rd
615-689-3550

TX Arlington
Cloud Data Comm
2504 Clearwood Dr
817-261-4253

TX Houston
Tel-Tex Inc
2825 West 11 St
713-868-6000

VA Newport News
Atlantic Communications
925 48th St
804-627-7600

VA Sterling
Comsel Corp
14 Brookfield Cir
703-525-5889

ONTARIO, CANADA
Markham ONT
Signatel Ltd
89 Telson Rd
416-495-9229

Products are listed alphabetically in the **Products & Services Directory**, page 5

DATOTEK INC
13740 Midway Rd
Dallas, TX 75234
214-233-1030
Contact: Tom Peddicord
■ Products & Services
Data security devices, encoder/decoders

Branch Sales Offices:

CA Encino
King Engineering Co
17333 Rancho St
213-981-8677

MD Bethesda
Warner Assoc Inc
9911 Carter Rd
301-469-8904

ALBERTA, CANADA
Edmonton
Williams Electronics Ltd
11619 147 St
403-455-3858

ONTARIO, CANADA
Markham
Signatel Ltd
89 Telson Rd
416-495-9229

ENGLAND
London
Datotek Inc
Kingsway House; 103 Kingsway
01-831-6641

DATUM INC
1363 S State College Blvd
Anaheim, CA 92806
714-533-6333
Contact: Tom Hudspeth
■ Products & Services
Cartridge drives
Cassette drives
Disc drives, large
Tape drives, magnetic

Branch Sales Offices:

CA San Jose
Datum Inc
4100 Moorpark Ave
408-249-5370

CO Denver
Datum Inc
10957 E Bethany Dr
303-693-3414

IL Des Plaines
Datum Inc
1001 E Touhy Ave
312-296-1064

MA Framingham
Datum Inc
Box 2014
617-872-6911

NJ Mountainside
Datum Inc
615 Sherwood Pkwy
201-654-5590

ENGLAND
Middlesex
Datum House
Cranford Ln, Harlington
01-897-0456

DAVID JAMISON CARLYLE CORP

2049 Century Park East
Los Angeles, CA 90067
213-277-4562
Contact: Dennis Cagan
■ Products & Services
Line sharing units
Minicomputers
Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Inverse multiplexers
Multiplexers, statistical (intelligent)
Multiplexers, group band
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modem eliminators
Local network systems
Cassette drives
Disc drives, floppy
Tape drives, magnetic

Data entry terminals
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Data access arrangement devices
Data communications consultants
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Los Angeles
David Jamison Carlyle Corp
213-277-4562

CA San Francisco
David Jamison Carlyle Corp
415-254-9378

CA Orange County
David Jamison Carlyle Corp
714-640-0355

HI Honolulu
David Jamison Carlyle Corp
808-531-5136

IL Chicago
David Jamison Carlyle Corp
312-975-1500

NJ Matawan
David Jamison Carlyle Corp
201-946-9669

DAYCO CORP

333 W First St; PO Box 1004
Dayton, OH 45401
513-226-7000
■ Products & Services
Ribbons and supplies for terminals and printers

Branch Sales Offices:

OH Dayton
Printing Products Co
333 W First St
513-226-5866

OH Dayton
Plastic Products Div
333 W First St
513-226-5855

OH Dayton
Rubber Products Co
333 W First St
513-226-5911

DECISION DATA COMPUTER CORP

100 Witmer Rd
Horsham, PA 19044
215-674-3300
Contact: Thomas W Tucker
■ Products & Services

Add-on main memory
Batch terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact

Branch Sales Offices:

AL Birmingham
Decision Data Computer Corp
1925 29th Av S
205-879-3617

AZ Phoenix
Decision Data Computer Corp
4040 E McDonald
602-275-0337

AR	Little Rock Decision Data Computer Corp 610 Rock St 501-374-7888	NY	Rochester Decision Data Computer Corp 167 Flanders St 716-436-6010	VA	Richmond Decision Data Computer Corp 2015 Staples Mill Rd 804-745-4370
CA	Burbank Decision Data Computer Corp 4405 Riverside Dr 213-843-0512	NY	Syracuse Decision Data Computer Corp 3650 James St 315-437-6583	WA	Renton Decision Data Computer Corp Evergreen Bldg 15 S Grady Way 206-624-3877
CA	San Diego Decision Data Computer Corp Ste E/4433 Convoy St 714-565-6575	NC	Charlotte Decision Data Computer Corp 501 Archdale Dr 704-525-3034	WI	Brookfield Decision Data Computer Corp 14260 W Greenfield Ave 414-784-6540
CA	San Mateo Decision Data Computer Corp 165 S Amphlett 415-574-7634	NC	Greensboro Decision Data Computer Corp 323 Swing Rd; Box 1114 919-294-4307	ONTARIO, CANADA Downsview Decision Data Computer Corp 168A Oakdale Rd 416-745-1342	
CO	Denver Decision Data Computer Corp 7100 Broadway 303-427-9759	NC	Raleigh Decision Data Computer Corp 7424 Chapel Hill Rd 919-833-5476	QUEBEC, CANADA Dollard Des Ormeaux Decision Data Computer Corp 70A Blvd Brunswick 514-683-2632	
CT	West Hartford Decision Data Computer Corp 630 Oakwood Av 203-247-7171	OH	Cincinnati Decision Data Computer Corp 11415 Century Blvd 513-671-2300	QUEBEC, CANADA Ville Vanier Decision Data Computer Corp 99 Bisson 418-527-8462	
FL	N Miami Beach Decision Data Computer Corp 111 NW 183 St 305-653-1660	OH	Highland Hts Decision Data Computer Corp 25 Alpha Park 216-461-1955	ENGLAND Staines Decision Data Computer Corp 48-54 London Road 011-44784-62421	
FL	Orlando Decision Data Computer Corp 7040 Lake Ellenor Dr 305-859-3494	OH	Columbus Decision Data Computer Corp 3845 April Ln 614-239-9100	DECITEK CORP 129 Flanders Rd Westboro, MA 01581 617-366-8334 Contact: Bill Sanford ■ Products & Services Disc drives, floppy Tape, paper Tape punch/reader, paper	
FL	Tampa Decision Data Computer Corp 5445 Mariner 813-894-3328	OH	Dayton Decision Data Computer Corp 1250 W Dorothy Lane 513-222-4242	Branch Sales Offices:	
GA	Atlanta Decision Data Computer Corp 5600 Roswell Rd NE 404-255-5383	OK	Oklahoma City Decision Data Computer Corp 2528 N Moore Ave 405-799-8471	CT	Madison Reptron 32 White Birch Rd 203-245-2242
IL	Elmhurst Decision Data Computer Corp 180 W Park Av 312-833-0440	OK	Tulsa Decision Data Computer Corp 9511 E 46 St 918-622-9610	DC	Silver Spring Spectro Systems Corp 11141 Georgia Ave 301-949-8261
IN	Indianapolis Decision Data Computer Corp 2421 Production Dr 317-248-2013	OR	Portland Decision Data Computer Corp 4614 SW Kelly Ave 503-224-5658	FL	Orlando Physimetrics Inc 999 Woodcock Rd 305-894-8081
KS	Shawnee Decision Data Computer Corp 7451 Switzer Rd 913-831-3663	PA	Pittsburgh Decision Data Computer Corp 200 Dinsmore Ave 412-922-1100	GA	Atlanta Physimetrics Inc 6400 Powers Ferry Rd 404-955-0155
LA	Metairie Decision Data Computer Corp 3229 36 St 504-837-9075	RI	E Providence Decision Data Computer Corp 159 Waterman Av 401-438-0014	IL	Chicago First Rep 9400 W Foster Ave
MI	Grand Rapids Decision Data Computer Corp 3685 Hagen Dr SE 616-247-7679	TN	Memphis Decision Data Computer Corp 2500 Mt Moriah 901-795-7450	KS	Shawnee Mission Inland Assoc 2310 W 75 St 913-362-2366
MN	Minneapolis Decision Data Computer Corp 8200 Humboldt Av S 612-881-3340	TN	Nashville Decision Data Computer Corp 310 Philfre Ct 615-367-2904	MN	Eden Prairie First Rep 7525 Mitchell Rd 612-944-2096
MO	Maryland Heights Decision Data Computer Corp 75 Worthington 314-878-0423	TX	Dallas Decision Data Computer Corp 8383 Stemmon Fwy 214-634-8080	MO	St Louis Inland Assoc 13100 Manchester Rd 314-821-3742
NJ	Union Decision Data Computer Corp 1600 Rt 22 201-688-4644	TX	Ft Worth Decision Data Computer Corp 5001 Brentwood Stair/Ste 104 817-457-7661	NY	Victor A & D Devices 626 Fishers Run 716-924-9171
NY	Cheektowaga Decision Data Computer Corp 2520 Union Rd 716-693-8472	TX	Houston Decision Data Computer Corp 10606 Hempstead Hwy 713-688-5550		
NY	New York Decision Data Computer Corp 2 Penn Pl 212-695-4814	UT	Salt Lake City Decision Data Computer Corp 3565 SW Temple 801-266-6772		

NC Chapel Hill
Physimetrics Inc
41 Cedar Terrace Rd
919-933-7380

OH Cleveland
Geotronics Inc
8180 Brecksville Rd
216-526-2535

OH Columbus
Geotronics Inc
4453 Willowbrook
614-457-8472

PA Hatboro
QED Electronics Inc
300 N York Rd
215-674-9600

SC Orange
MSC

201 S Anita
714-978-0721
TX Dallas
SCI Sales Inc
13771 N Central Expwy
214-234-8072

QUEBEC, CANADA

Brossard
Caleg Inc
Box 58
514-861-4615

DEI-TELEPRODUCTS

563 N Citracado Pkwy
Escondido, CA 92025
714-743-8344

Contact: Charles R Rose

■ Products & Services

Line drivers

Modems, limited distance

Modems, multipoint

Modems, multiport

Modems, voice-grade, low-speed

(0-1,200 b/s)

Modems, voice-grade, medium speed

(1,800-3,600 b/s)

Modem eliminators

MIL 188C adapters

Parallel line extenders

Error rate detectors

Code converters

Furniture, cabinets, terminal enclosures

Data communications consultants

Branch Sales Offices:

CA Playa del Rey

Mark Assoc

7913 W 81 St

213-821-1052

CO

Arvada

Claredon Co

Box 1205

303-424-2010

GA

Milpitas

Effective Systems

365 San Andreas

408-946-3404

IL

Oakbrook

Data-Tel Systems

823 Commerce Rd

312-887-1040

MA

North Easton

Heather Associates

Box 369

617-583-7698

NJ

Palisades Park

Datanet Inc

345 Commercial Ave

201-592-6750

PA

King of Prussia

Rivco January Inc

Box 338

215-265-5211

VA Springfield
Intron Corporation
7830 Backluc Rd
703-569-1502

WA Bellevue
Data Power
Box 3012
206-453-8200

For further catalog information, turn to **UpDate Service Card, page 201.**

DELTA DATA SYSTEMS

Woodhaven Ind Pk

Cornwell Heights, PA 19020

215-639-9400

Contact: G Ross Bates

■ Products & Services

Disc drives, floppy

Batch terminals

Data entry terminals

Programmable terminals

Interactive terminals

Remote job entry terminals

Terminal controllers

Video data terminals (KSR)

Word recognition units

Word processors, communicating

Computer/communications interfaces

Data communications software, distributed

data processing system vendors

Data communications software, intelligent

terminal vendors

Maintenance organizations

Branch Sales Offices:

AZ

Phoenix

Datatrend

2739 W Palm Ln

602-272-7139

CA

Fullerton

Delta Data Systems

2736 W Orangethorpe

714-870-5561

CA

Los Angeles

Delta Data Systems

21733 Lassen St

213-998-8402

CA

San Francisco

R C Data

528 Wedell

415-656-5791

CO

Englewood

Data Systems Mktg

14 Inverness Dr E

303-770-1972

DC

Silver Spring

Delta Data Systems Terminal

Networks Inc

118 Eldred Dr

301-622-3535

FL

Orlando Hills

Gra-Mar Inc

3165 McCrory Pl

305-894-3351

IL

Carol Streams

Delta Data Systems

603 Gunderson

312-686-2726

MI

Farmington Hills

Carter, McCormic & Peirce

23995 Freeway Pk Dr

313-477-7700

NY

New York City

Delta Data Systems

122 E 42 St

212-682-8836

PA Cornwells Heights
Delta Data Systems
Woodhaven Ind Pk
215-639-9400

WA Seattle
Datec
605 Strander Blvd
206-575-1470

BELGIUM

Brussels

Synelec Information Systems

Ave Louise 176

6470108

ENGLAND

Hertsfordshire

Delta Data Systems Ltd

Swallowfields Welwyn Garden City

33833

FRANCE

Paris

Peritecnic

90 Ave Albert 1er

7494037

SWITZERLAND

Basel

Wenger Datentechnik

Guterstrasse 253

345096

DELTEC CORP

DIV OF GOULD INC

980 Buenos Ave

San Diego, CA 92110

714-275-1331

Contact: Gary Thomas

■ Products & Services

Uninterruptible power supplies, line

correctors, etc

Branch Sales Offices:

CA

Torrance

Power Specialists Co

3868 Carson St

213-540-0580

CA

Santa Clara

Thomas Assoc

460 Aldo Ave

408-988-4484

CO

Denver

Barnhill Three

7076 S Alton Way

303-779-3600

GA

Atlanta

F-M Assoc

2529 A Skyland Dr

404-634-7830

KS

Derby

Palatine Sales

221 W Market St

316-788-0621

MA

Chelmsford

Tekdata

6 Kidder Rd

617-256-9061

MN

Excelsiro

Domino Unlimited

3400 Kings Point Rd

219-747-5621

NJ

Cherry Hill

Scientific Representatives

496 N Kings Hwy

609-482-0059

NJ

Paramus

SDM Representatives

23 N Farview Ave

201-368-0125

OH

Wickliffe

Data-Tron

30314 Euclid Ave

216-585-8421

- TX Richardson
Barnhill Two
1101 Executive Dr
214-231-2573
- VA McLean
Creative Marketing Associates
6716 Old McLean Village Rd
710-883-0310
- WA Lynnwood
Industrial Electronic
Instruments Co
19707 44th Ave W
206-775-3516
- AUSTRALIA
Springvale Victoria
Stone Platt Electrical
134 Springvale Rd 3171
- EGYPT (UAR)
Cairo
Metro
Box 2466
971336
- FRANCE
Paris
Elexo
BP 24 91370 Verrieres Le Buisson
6930.28.80
- GERMANY, WEST
Monchengladbach
Ziegler-MeBwerterfassung GMBH &
Co
Postfach 510
- HONG KONG
Hong Kong
Cable & Wireless Systems Inc
GPO Box 4477
5-283385
- ISRAEL
Tel Aviv
Rapac Electronics BV
Box 18053
- NETHERLANDS
The Netherlands
Simac Electronics BV
Veenstraat 20
040533725
- SINGAPORE
Bukit Timah
The General Electric Co of
Singapore Ltd
PO Box 4046
663011
- TAIWAN
Taiwan
Tien Sheng Enterprise Co Ltd
Box 30-518 Taipei
- DENNISON KYBE
132 Calvary St
Waltham, MA 02154
617-899-0012
Contact: Al Black
■ Products & Services
Cassettes
Discs, floppy
Furniture, cabinets, terminal enclosures
Branch Sales Offices:
- CA N Hollywood
Dennison Kybe Corp
4101 Lankershim Blvd
213-980-8365
- GA Tucker
Dennison Kybe Corp
2175 North Lake Pkwy
404-491-7769
- IL Des Plaines
Dennison Kybe Corp
999 East Touhy Ave
312-298-8870
- NY New York
Dennison Kybe Corp
1 Penn Pl
212-594-9273
- DEST DATA CORP
2380 Bering Dr
San Jose, CA 95131
408-946-7100
Contact: Thomas C Schaefer
■ Products & Services
Word recognition units
Branch Sales Offices:
- CA Orange
Dest Data Corp
505 City Parkway W
714-978-8055
- CA San Francisco
Dest Data Corp
44 Montgomery
415-391-9254
- NY New York
Dest Data Corp
575 Madison Ave
212-486-1880
- NC Charlotte
Office Systems Inc
1129 E Moreland St
704-374-0822
- OH Columbus
Word Data Processing Systems Inc
1597 W 5th Ave
614-486-0491
- PA Aston
Newcorp Products Inc
45 Commerce Dr
215-485-8180
- TX Dallas
Dest Data Corp
8150 N Central Expwy
214-369-7418
- VA Falls Church
Dest Data Corp
400 N Washington St
703-534-0501
- GERMANY, WEST
Koln
CPT Text Computer
Kolner Str 35
- DEVELCON ELECTRONICS INC
200 North St
Doylestown, PA 18901
215-348-1900
Contact: David A Kane
■ Products & Services
Concentrators
Line sharing units
Modem sharing units
Port selectors
Port sharing units
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modem eliminators
EIA cable testers
Protocol analyzers
Response-time monitors
Cables, electrical prefabricated extending
Switches, data communications, automatic
Branch Sales Offices:
- AL Huntsville
Comm International Inc
Box 4530
205-533-3165
- AZ Tempe
Qualtech
610 W Broadway
602-966-5900
- CA Long Beach
C T I Data Systems
3480 E Spring St
213-426-7375
- CA El Granada
DataComm Marketing
Box 1192
415-726-6326
- CO Evergreen
Westtek Data Products Inc
Box 1355
303-674-5255
- FL Longwood
Southern Data Assoc
Box 3249
305-831-3311
- GA Atlanta
Flex-Comm International Inc
3379 Peachtree Rd
404-237-9242
- IL Grays Lake
Inter-Business Corp Data Systems
30360 N Chardon Ln
312-546-6262
- MD Bethesda
Powell & Pendergraph Inc
7979 Old Georgetown Rd
301-656-4535
- NJ Fort Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911
- NM Albuquerque
Qualtech
130 Louisiana NE
Pittsford
Cameron Assoc Inc
1 Grove St
716-385-1681
- NC Hendersonville
Flex-Comm International Inc
Box 1551
704-693-0920
- OH Chagrin
W C Koepf Assoc
Box 16
216-247-5129
- OH Spring Valley
W C Koepf Assoc
1245 Night Hawk Trail
513-733-8555
- OH Strongsville
W C Koepf Assoc
17107 Partridge Dr
313-459-9150
- PA Willow Grove
Powell & Pendergraph Inc
801 Easton Rd
215-657-0330
- PA Doylestown
Develcon Electronics Inc
200 North St
215-348-1900
- TX Dallas
S C I Sales
13771 N Central Expwy
214-234-8072
- TX Houston
S C I Sales
1199 Nasa Rd
713-488-3728
- VA Richmond
Powell & Pendergraph Inc
Box 29643
804-264-2341
- WA Bellevue
DPM Inc
15935 NE 8 St
206-747-3309

SASKATCHEWAN, CANADA

Saskatoon
Develcon Electronics Ltd
108-103 Street E
306-374-2202

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

DIABLO SYSTEMS INC A XEROX CO

24500 Industrial Blvd Bldg L101
Hayward, CA 94545
415-786-5000

Contact: Robert Burks

■ Products & Services

Data entry terminals

Remote job entry terminals

Teleprinters, impact

Branch Sales Offices:

CA San Jose

Diablo Systems
2025 Gateway Pl
408-286-9424

CA

Los Angeles
Diablo Systems
8939 S Sepulveda Blvd
213-641-0862

CA

Newport Beach
Diablo Systems
4120 Birch St
714-955-1005

IL

Barrington
Diablo Systems
South Barrington Rd
312-381-3661

MA

Waltham
Diablo Systems
1605 Trapelo Rd
617-890-6400

NJ

Marlton
Diablo Systems
900 W State Hwy 70
609-983-3353

NJ

Parlin
Diablo Systems
1145 Bordentown Ave
201-727-2357

TX

Richardson
Diablo Systems
1231 Columbia Dr
214-234-0885

ENGLAND

Surrey
Diablo Systems
19/20 The Broadway Woking Gu 21
5 Ap
048-62-71991

FRANCE

Boulogne
Diablo Systems
2 Rue de la Ferme
01-609-94-18

GERMANY, WEST

Dusseldorf-Heerd
Diablo Systems
Heesenstrasse 654-70
11-508-67-79

GERMANY, WEST

Muenchen
Diablo Systems
Riesenfeldstr 75
089-351-70-85

DI/AN CONTROLS INC

944 Dorchester Ave
Boston, MA 02125
617-288-7700
Contact: Donald W Blood

■ Products & Services

Interactive terminals

Teleprinters

Teleprinters, impact

DIGICOM DATA PRODUCTS INC

1440 Koll Circle
San Jose, CA 95112
408-279-8711

Contact: A W Backus

■ Products & Services

Concentrators

Line sharing units

Modem sharing units

Acoustic couplers

Modems, voice-grade, low-speed
(0-1,200 b/s)

Disc drives, floppy

Discs, floppy

Electronic mailboxes

Floppy disc recorders

Code converters

DIGI-DATA CORP

8580 Dorsey Run Rd
Jessup, MD 20794
301-498-0200

■ Products & Services

Tape drives, magnetic

Branch Sales Offices:

CA

San Diego
Western Scientific Mktg Inc
5402 Ruffin Rd
714-565-6699

CA

Mt View
Eakins Assoc Inc
999 Independence Ave
415-969-4533

MD

Jessup
Digi-Data Corp
8580 Dorsey Run Rd
301-498-0200

MA

Waltham
Computer Marketing Inc
257 Crescent St
617-894-7000

NY

Elmont
Crane & Egert Corp
146 Meacham Av
516-488-2100

NY

Rochester
RG Engineering
3100 Monroe Av
716-385-3021

TX

Houston
Data Marketing Assoc Inc
3330 Bering Dr
713-780-2511

ENGLAND

Maidenhead Berkshire
Digi-Data Ltd
36 The Broadway
0628 29555

DIGILOG SYSTEMS INC

MICRO COMPUTER DIV

Babylon Rd
Horsham, PA 19044

■ Products & Services

DDP systems

Batch terminals

Data entry terminals

Programmable terminals

Remote job entry terminals

Video data terminals (KSR)

Video data terminals (RO)

Word processors, communicating

Data communications consultants

Data communications software, distributed
data processing system vendors

Data communications software, intelligent
terminal vendors

DIGILOG SYSTEMS INC
NETWORK CONTROL DIV

Babylon Rd
Horsham, PA 19044
215-672-0800

Advertising page 81

Contact: Roy D Gemberling

■ Products & Services

Modem sharing units

Line drivers

Modems, limited distance

Modem eliminators

Data content monitors

Error rate detectors

Protocol analyzers

Network management centers

Technical control centers

DDP systems

Programmable terminals

Portable data entry terminals

Video data terminals (KSR)

Data access arrangement devices

Selection & transfer equipment, monitor &
test switching equipment

Selection & transfer equipment, patching
equipment

Switches, data communications, automatic

Switches, data communications, manual

Data communications consultants

Branch Sales Offices:

AZ

Scottsdale
Dennis Grenier
10231 N Scottsdale
602-998-4838

CA

Lafayette
Persons & Associates
3717 Mount Diablo
415-284-2912

CA

Simi Valley
Kirby & Associates
4565 E Industrial St
805-522-8148

FL

Miami Lakes
Networks Inc
14560 NW 60th Ave
305-822-6750

GA

Atlanta
Flex-Comm Intl Inc
3379 Peachtree Rd NE
404-237-9242

IL

Chicago
H H Sales Co Inc
2007 N Sedgwick Ave
312-871-8250

KS

Shawnee
Atech
Box 3334
913-268-9644

MD

Ashton
Blackwood & Assoc
17904 Ednor View Terrace
301-895-7469

MA

Danvers
John Melanson & Assoc
39 Pine St
617-774-1220

MN

Eden Prairie
First Rep Co
6420 Flying Cloud Dr
612-944-2097

MO

St Louis
Atech
Box 12444
314-428-7447

- NJ** Saddlebrook
L & M Assoc
511 Victor St
201-843-8700
- NY** Iliion
Annese & Assoc Inc
60 Pine St
315-895-7469
- NC** Research Triangle Park
A b Andrews & Co Inc
Suite 1 10 Park Plaza
919-549-0563
- OH** Rising Sun
Mecom Inc
7033 Sandusky Rd
419-457-3231
- PA** Andalusia
L & M Assoc
965-A Bristol Pk
215-245-6658
- TX** Dallas
Computer Associates
212 Empire Ctr;8383 Stemmons
214-634-1320
- WA** Seattle
SJI Corp
5950 6th Ave S
206-763-8981
- DIGITAL ASSOCIATES CORP**
1039 E Main
Stamford, CT 06902
203-327-9210
Contact: Arthur L Schimel
■ Products & Services
Remote line printers
Computer/communications interfaces
Ribbons and supplies for terminals and
printers
Switches, data communications, automatic
Switches, data communications, manual
Used equipment
Branch Sales Offices:
CT Stamford
DAC International
1039 E Main St
203-327-9210
IL Skokie
DAC Chicago
4711 Golf Rd
312-677-1580
NY New York
DAC New York
420 Lexington Ave
212-599-2805
- DIGITAL COMMUNICATIONS ASSOC
INC**
135 Technology Pk
Norcross, GA 30092
404-448-1400
Advertising page 36
Contact: William L Goldstein
■ Products & Services
Front-end processors
Multiplexers, statistical (intelligent)
Port selectors
Remote network processors
Switches, data communications, automatic
Branch Sales Offices:
AZ Scottsdale
Barnhill Three Inc
7319 E Stetson Dr
602-947-7841
CA Lafayette
Persons & Associates Inc
3717 Mt. Diablo Blvd
415-284-2912
- CO** Englewood
Barnhill Three Inc
7076 S Alton Way
303-779-3600
- CT** Norwalk
Datacomm Management Sciences Inc
181 Main St
203-838-7183
- DE** Norristown
Datacomm Management Sciences Inc
564 Long Meadow Rd
215-539-1217
- FL** Norcross
Digital Communications
Associates Inc
135 Technology Park
404-448-1400
- GA** Norcross
Digital Communications Assoc Inc
135 Technology Park
404-448-1400
- HI** Honolulu
The Thorson Company
377 Ala Moana Blvd
- IL** Wheeling
Inter Business Corporation
1925 N Milwaukee
312-459-8866
- IN** Columbus
Gerhard & Associates Inc
1384 Grandview
614-488-9751
- IA** Cedar Rapids
Cahill Schmitz & Cahill
208 Collings Rd
319-377-8219
- KS** St Johns
Midwest Marketing MR Inc
3606 Woodson Rd
314-426-2500
- KY** Columbus
Gerhard & Associates Inc
1384 Grandview
614-488-9751
- LA** Norcross
Digital Communications
Associates Inc
135 Technology Park
404-448-1400
- ME** Fairhaven
Data Brain Inc
PO Box 161 11 Ridgecrest
617-994-3944
- MD** Silver Spring
Terminal Networks
1370 Lamberton Dr
301-649-6000
- MA** Fairhaven
Data Brain Inc
Box 161
617-994-3944
- MI** Ann Arbor
Gerhard & Assoc Inc
2321 Lancashire
313-996-8077
- MN** St Paul
Cahill Schmitz & Cahill
315 North Pierce
612-646-7217
- MS** Norcross
Digital Communications
Associates Inc
135 Technology Park
404-448-1400
- MO** St Johns
Midwest Mktg MR Inc
3606 Woodson Rd
314-426-2500
- MT** Englewood
Barnhill Three Inc
7076 S Alton Way
303-779-3600
- NE** St Johns
Midwest Marketing MR Inc
3606 Woodson Rd
314-426-2500
- NV** Lafayette
Persons & Associates Inc
3717 Mt Diablo Blvd
415-284-2912
- NH** Fairhaven
Data Brain Inc
Box 161 11 Ridgecrest
617-994-3944
- NJ** Huntington
The Technology Consortium
Box 619
212-594-5880
- NJ** Norristown
Datacomm Management Sciences Inc
564 Long Meadow Rd
215-539-1217
- NM** Albuquerque
Barnhill Three Inc
1410-D Wyoming NE
505-299-7658
- NY** Huntington
The Technology Consortium
Box 619
212-549-5880
- NY** Dewitt
D B Assoc Inc
3307 Erie Blvd E
315-446-0220
- NC** Norcross
Digital Communications
Associates Inc
135 Technology Park
404-448-1400
- ND** St Paul
Cahill Schmitz & Cahill
315 North Pierce
612-646-7127
- OH** Columbus
Gerhard & Assoc Inc
1384 Grandview
614-488-9751
- OK** Richardson
Barnhill Two
1101 Executive Dr
214-231-2573
- OR** Beaverton
Dated Inc
7960 SW Cirrus Dr
503-641-6644
- PA** Norristown
Datacomm Management Sciences Inc
564 Long Meadow Rd
215-539-1217
- PA** Columbus
Gerhard & Associates Inc
1384 Grandview
614-488-9751
- RI** Fairhaven
Data Brain Inc
Box 161 11 Ridgecrest
617-994-3944
- SC** Norcross
Digital Communications
Associates Inc
135 Technology Park
404-448-1400
- SD** St Paul
Cahill Schmitz & Cahill
315 North Place
612-646-7217

TN Norcross
Digital Communications
Associates Inc
135 Technology Park
404-448-1400

TX Richardson
Barnhill Two Inc
1101 Executive Dr E
214-231-2573

TX Austin
Barnhill Two Inc
111 W Anderson Ln #221
512-451-0217

TX Houston
Barnhill Two Inc
10606 Hempstead Hwy
713-688-9971

UT Murray
Barnhill Three Inc
5180 South 300 West
801-262-3000

VT Fairhaven
Data Brain Inc
Box 161 11 Ridgcrest
617-994-3944

VA Silver Spring
Terminal Networks Inc
1370 Lmberton Dr
301-622-3636

WA Seattle
Datec Inc
364 Upland Dr
206-575-1470

WV Columbus
Gerhard & Associates Inc
1384 Grandview
614-488-9751

WI Wheeling
Inter Business Corp
N Milwaukee Ave Ste 125
WY Englewood
Barhill Two & Three
7076 S Alton Way
303-779-3600

DIGITAL COMMUNICATIONS CORP DIV MA/COM

11717 Exploration Way
Germantown, MD 20767
301-428-5500
Advertising page 43
Contact: Richard T Hampton
■ Products & Services
Concentrators
Front-end processors
Message switchers
Multiplexers, statistical (intelligent)
Packet processors
Remote network processors
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Switches, data communications, automatic

Branch Sales Offices:

AL Huntsville
W A Brown Instruments Inc
7917-C Charlotte Dr
205-883-8660

CA Mountain View
W A Brown Instruments Inc
2680 Bayshore Frontage Rd
415-964-4335

FL Ft Lauderdale
W A Brown Instruments Inc
961 NW 53rd St
305-776-4800

GA Atlanta
W A Brown Instruments Inc
3781 NE Expressway
404-455-1035

IL Arlington Hts
W A Brown Instruments Inc
219 W University Dr
312-398-7660

MD Gaithersburg
W A Brown Instruments Inc
19544 Club House Rd
301-258-9790

NJ Ridgewood
W A Brown Instruments Inc
171 E Ridgewood Ave
201-445-5210

NC Durham
W A Brown Instruments Inc
828 Glendale Ave
919-682-2383

OH Chagrin Falls
W A Brown Instruments Inc
68 Olive St
216-247-5129

TX Dallas
W A Brown Instruments Inc
14241 Proton Rd
214-661-9633

DENMARK

Glostrup
W A Brown Instruments Inc
8 Smedeland
02-969822

FRANCE

La Plaine St-Denis
W A Brown Instruments Inc
114 av du President-Wilson
01-243-2244

GERMANY, WEST

Munich
W A Brown Instruments Inc
Claude-Lorrain-Strasse 29
089-652096

ITALY

Milan
W A Brown Instruments Inc
P.le Zavattari n 12
02-43882732

SWITZERLAND

Richterswil/Schweiz
W A Brown Instruments Inc
Bergstrasse 43
01-784-2226

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

DIGITAL DATACOM INC

17951 Skypark Cir K
Irvine, CA 92714
714-549-8943
Contact: James W McKee
■ Products & Services
Data content monitors
DDP systems
Cartridge drives
Badge readers
Batch terminals
Digital plotters
Remote line printers
Terminal controllers
Computer/communications interfaces
Protocol converters
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

Branch Sales Offices:

CA Long Beach
CTI Data Systems Inc
3480 E Spring St
213-426-7375

CO Littleton
Davis Assoc
709 W Littleton Blvd #25
303-795-1400

IL Elk Grove
Oasis Sales Corp
2250-K Landmeir Rd
312-640-1850

MA Needham
Jim Wild Inc
570 Hillside Ave
617-444-2366

NM Albuquerque
Par Assoc
2610 San Mateo NE
505-881-5000

NY Jericho
J J Wild Inc
400 Jericho Tnpk
516-935-6600

WA Bellevue
DPM Assoc
515-116 Ave NE #101
206-453-9082

DIGITAL DEVELOPMENT CORP

8650 Balboa Av
San Diego, CA 92123
714-278-9920
Contact: J P Lazare
■ Products & Services
Disc drives, large

Branch Sales Offices:

CA San Diego
Digital Dev Corp
8650 Balboa Ave
714-278-9920

CT Greenwich
Digital Dev Corp
Witherell Dr
203-661-8688

IL Des Plaines
Digital Dev Corp
960 S River Rd
312-635-8080

TX Richardson
Digital Dev Corp
Box 2482
214-235-5557

ENGLAND

Basingstoke
DDC Ltd
Kingsland Estate
0256-53883

FRANCE

Florence
Digital Development France SARL
3, Place Gustave

DIGITAL EQUIPMENT CORP

146 Main Street
Maynard, MA 01754
617-897-5111
Contact: Customer Assistance
617-493-7161
■ Products & Services
Minicomputers
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy

Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Tape, paper
Tape punch/reader, paper
Badge readers
Bar code readers
Graphic display terminals
Programmable terminals
Interactive terminals
Remote line printers
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Computer/communications interfaces
Data communications consultants
Maintenance organizations
Used equipment

Branch Sales Offices:

AL Birmingham
AL Huntsville
AZ Phoenix
AZ Tucson
AR Little Rock
CA Costa Mesa
CA El Segundo
CA Los Angeles
CA Monrovia
CA Oakland
CA Sacramento
CA San Diego
CA San Francisco
CA Santa Barbara
CA Santa Clara
CA Sherman Oaks
CO Colorado Springs
CO Denver
CT Bridgeport
CT Meriden
DE Wilmington
DC Washington
FL Miami
FL Orlando
FL Pensacola
FL Tampa
GA Atlanta
HI Honolulu

ID Boise
IL Arlington Heights
IL Chicago
IL Peoria
IL Rolling Meadows
IN Indianapolis
IA Bettendorf
KY Louisville
LA New Orleans
MD Baltimore
MD Odenton
MA Boston
MA Maynard
MA Marlboro
MA Springfield
MA Waltham
MA Worcester
MI Detroit
MI Farmington Hills
MI Kalamazoo
MN Minneapolis
MO Kansas City
MO St Louis
NE Omaha
NV Las Vegas
NV Reno
NH Manchester
NJ Cherry Hill
NJ Parsippany
NJ Princeton
NJ Somerset
NM Albuquerque
NM Los Alamos
NY Albany
NY Buffalo
NY Fairport
NY Garden City
NY Manhattan
NY Melville
NY Syracuse

NY Tarrytown
NC Chapel Hill
NC Charlotte
OH Cincinnati
OH Cleveland
OH Columbus
OH Dayton
OK Tulsa
OR Portland
PA Allentown
PA Harrisburg
PA Philadelphia
PA Pittsburgh
RI Providence
SC Columbia
SC Greenville
TN Knoxville
TN Memphis
TN Nashville
TX Austin
TX Dallas
TX El Paso
TX Houston
TX San Antonio
UT Salt Lake City
VT Burlington
VA Fairfax
VA Norfolk
VA Richmond
WA Bellevue
WA Seattle
WA Spokane
WV Charleston
WI Milwaukee

DIGITAL PATHWAYS INC.

1260 L'Avenida
Mountain View, CA 94043
415-969-7600

Advertising page 147
Contact: Marie T Stokes
■ Products & Services
Add-on main memory
Word recognition units
Switches, data communications, manual

DIGITAL PRODUCTS CORP

4028 NE 6th Ave
Fort Lauderdale, FL 33334
305-564-0521
Contact: Manuel Wong
■ Products & Services
Automatic calling units

Get new product information when it breaks?
Turn to **UpDate Service Card, page 201.**

DIGITAL SYSTEMS CORP

3 N Main
Walkersville, MD 21793
301-845-4141
Contact: John Provo
■ Products & Services
Front-end processors
Minicomputers
Multiplexers, statistical (intelligent)
DDP systems

Branch Sales Offices:

MD Frederick
Digital Systems Corp
10 West College Ter
301-662-9155

ME Frederick
American Vernier Corp
406 Sagner Ave
301-694-9355

WA Washington
Digital Systems Corp
1925 K St
202-466-7715

DIGITECH DATA INDUSTRIES INC

66 Grove St
Ridgefield, CT 06877
203-438-3731
Contact: John J Bird
■ Products & Services
Data content monitors
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Technical control centers

Branch Sales Offices:

CA Newport Beach
The Helfrich Company
1831 Kings Rd
714-631-2300

FL Satellite Beach
General Technology
596B Sherwood Ave
305-777-1133

IL Skokie
KNE Resources
7840 Lincoln Ave
312-673-5858

MD Linthicum Heights
KD Associates
201 Benton Ave
301-636-1151

MA Wakefield
IMF Sales Associates
18 Lakeside Office Park
617-245-8900

MN Minneapolis
RAE Assoc
7317 Cahill Rd
415-938-9577

OH Columbus
Gerhard & Assoc
2228 Fairfax Rd
614-488-9751

ONTARIO, CANADA

Markham
Signalnet Ltd
89 Telson Rd
416-495-9229

ENGLAND

Middlesex
Aspen Electronics Ltd
2 Kildare Close

FRANCE

Paris
G W Walton
60 Rue Pierre Charron

DMC SYSTEMS INC

2300 Owen St
Santa Clara, CA 95051
408-727-4444
Contact: Larry Dorie
■ Products & Services
Modem sharing units
DDP systems
Disc drives, floppy
Interactive terminals
Teleprinters, impact

DOCUMATION INC

PO Box 1240
Melbourne, FL 32901
305-725-5520
Contact: William R McEwen
■ Products & Services
Remote line printers
Remote job entry terminals
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA San Mateo
Documation Inc
2121 S El Camino Real
415-574-4060

CA Long Beach
Documation Inc
3711 N Long Beach Blvd
213-595-6775

CA San Diego
Documation Inc
7330 Opportunity Rd
714-569-8131

CO Denver
Documation Inc
9745 E Hampden Ave
303-755-5990

CT Hartford
Documation Inc
One Financial Plaza
203-278-2010

CT Greenwich
Documation Inc
Three Pickwick Plaza
203-869-4123

FL Miami
Documation Inc
8001 NW 36 St
305-592-9655/6

FL Tampa
Documation Inc
3214 W Kennedy Blvd
813-879-2895/6

GA Atlanta
Documation Inc
300 Interstate N
404-955-0309

IL Oak Brook
Documation Inc
18 West 100 22nd St
312-620-1831

LA New Orleans
Documation Inc
Kenilworth Professional Bldg
504-241-8194

MD Hunt Valley
Documation Inc
Executive Plaza 1
301-667-4130

MA Waltham
Documation Inc
400-1 Totten Pond Rd
617-890-2650

MI Southfield
Documation Inc
26555 Evergreen Rd
313-353-8181

MN Minneapolis
Documation Inc
2901 Metro Dr
612-854-7020

MO St Louis
Documation Inc
12300 Olive St Rd
314-576-6840

MO Independence
Documation Inc
6100 West Creek Rd
816-356-1331

MO Kansas City
Documation Inc
3217 Broadway
816-753-4730

NJ Union
Documation Inc
2400 Morris Ave
201-686-5223

NY East Meadow
Documation Inc
1900 Hempstead Tnkp
516-794-1186

NY New York
Documation Inc
1250 Broadway
212-695-4195

NC Charlotte
Documation Inc
501 Archdale Dr
704-525-6083

OH Cincinnati
Documation Inc
4700 Ashwood Dr
810-461-2669

OH Columbus
Documation Inc
1395 E Dublin-Granville Rd
614-885-0138

OH Independence
Documation Inc
6100 West Creek Rd
216-447-1025

OK Tulsa
Documation Inc
3035 E Skelly Dr
918-749-5014/5

PA Pittsburgh
Documation Inc
1910 Cochran Rd
412-561-1000

PA King of Prussia
Documation Inc
1150 1st Ave
215-337-2850

TX Dallas
Documation Inc
4240 Spring Valley Rd
214-661-5256

TX Houston
Documation Inc
8582 Katy Freeway
713-932-9172

- VA McLean
Documation Inc
1616 Anderson Rd
703-827-0220
- VA Richmond
Documation Inc
3108 Parkham Rd
804-794-6809
- WA Seattle
Documation Inc
950 Andover Pk E
206-575-4627
- WI Wauwatosa
Documation Inc
2300 Mayfair Rd
414-257-1750
- PUERTO RICO
Puerto Rico
Documation de Puerto Rico
- VIRGIN ISLANDS
Greenwich
Documation Inc
600 Putnam Ave
203-622-1420
- ONTARIO, CANADA
Canada
Documation of Canada Ltd
- BELGIUM
Belgium
Documation Belgium
- ENGLAND
Esher Surrey
Documation World Trade Corp
- ENGLAND
Middlesex
Documation Ltd
- FRANCE
Paris
Documation Sarl
- GERMANY, WEST
Frankfurt
Documation GMBH
- JAPAN
Japan
Documation Inc
- NETHERLANDS
The Netherlands
Documation BV
- NORTHERN IRELAND
Ireland
Documation Products BV
- DOMINICK TARRICONE
Box 81
Commack, NY 11725
516-543-6579
Contact: Dominick Tarricone
■ Products & Services
Lightwave (fiber optic) systems
Infrared systems
Network management centers
Technical control centers
Data communications consultants
Data communications software,
communications processors vendors
Educational services
Network simulation services
- DPF INC
141 Central Park Ave S
Hartsdale, NY 10530
Contact: Edward Zukerman
■ Products & Services
Front-end processors
Computer/communications interfaces
Lease and resale organizations
- Branch Sales Offices:
- AZ Scottsdale
DPF Inc
5834 E Justine Rd
602-944-4420
- GA Atlanta
DPF Inc
2256 Northlake Pkwy
404-934-9610
- IL Palatine
DPF Inc
835 Sterling Ave
312-991-5660
- TX Houston
DPF Inc
7000 Regency Sq Blvd
713-972-1003
- VA Vienna
DPF Inc
8150 Leesburg Pk
703-821-8766
- DRANETZ ENGINEERING LABS INC
2385 S Clinton Ave
S Plainfield, NJ 07080
201-287-3680
Contact: A Orlacchio
■ Products & Services
Electrical-parameters test equipment
Response-time monitors
Selection & transfer equipment, monitor &
test switching equipment
Uninterruptible power supplies, line
correctors, etc
- Branch Sales Offices:
- AL Huntsville
Kemp Instruments
Box 5430
205-837-4304
- AZ Scottsdale
Barnhill Three
7319 E Stetson Dr
602-947-7841
- CA Palo Alto
Coherent Mktg Assocs
1890 Embarcadero Rd
415-856-1167
- CA Los Angeles
Ezra Mintz Assoc
8939 S Sepulveda
213-670-5410
- CA San Diego
Ezra Mintz Assocs
7841 Balboa Ave
714-565-4921
- CO Englewood
Barnhill Two & Three
7076 S Alton Way
303-779-3600
- CT Mount Carmel
Scientific Devices
3074 Whitney Ave
203-248-9361
- FL Orlando
Datarep
Box 5929
305-843-5224
- FL Seminole
Datarep
9261 78th Ave N
813-393-1741
- FL Melbourne
Datarep
713 Orange Blossom Dr
305-259-8924
- GA Atlanta
Kemp Instruments
5725 Buford Hwy NE
404-452-8050
- IL Elk Grove Village
Loren Green Assocs
30 Martin Ln
312-593-0282
- IN Indianapolis
Loren Green Assocs
4745 W 71 St
317-293-9827
- KS Shawnee
Atech Inc
Box 3334
913-268-9644
- LA Lafayette
Kemp Instruments
137 Pembroke La
318-984-3516
- LA Baton Rouge
Barnhill Two
440 N Foster
504-924-6826
- MD Rockville
Electronic Mktg Assocs
11716 Parklawn Dr
301-881-5300
- MA Waltham
Scientific Devices
181 West St
617-890-2252
- MI Farmington
Carter McCormic & Peirce
23995 Freeway Park Dr
313-477-7700
- MN Minneapolis
Loren Green Assocs
6225 University Av
612-571-6738
- MO St Louis
Atech Inc
PO Box 12444
314-428-7447
- NJ Paramus
SDM Representatives
15 Farview Ter
201-368-0123
- NM Albuquerque
Barnhill Three
1410-D Wyoming NE
505-299-7658
- NY Rochester
SDM Representatives
673 Panorama Trail W
716-381-9962
- NC Charlotte
Baesel & Assocs
Box 6153
704-375-1044
- OH Cleveland
Carter McCormic & Peirce
22650 Lorain Rd
216-779-5100
- OH Dayton
Carter McCormic & Peirce
4977 Northcutt Pl
513-222-7700
- OR Portland
Topp Engr Sales Corp
6110 SW Brugger St
503-244-7265
- PA Plymouth Meeting
Electronic Mktg Assoc
648 Germantown Pike
215-828-7400
- PA Monroeville
Carter McCormic & Peirce
409 Beatty Rd
412-372-4415
- TX Austin
Barnhill Two
111 W Anderson La
512-451-0217

- TX** Richardson
Barnhill Two
1101 Executive Dr E
214-231-2573
- TX** Houston
Barnhill Two
10606 Hempstead Hwy
713-688-9971
- UT** Murray
Barnhill III
5180 South 3rd West
801-262-3000
- WA** Bellevue
Topp Engr Sales Corp
Box 250
206-747-5400
- WA** Richland
Topp Engr Sales Corp
Box 1327
509-588-4008
- ONTARIO, CANADA**
Scarborough
Associated Test Equip Ltd
3530 Pharmacy Ave
416-497-2208
- ARGENTINA**
Buenos Aires
Servotron
Belgrano 510
01 306323
- AUSTRALIA**
Arncliffe
Electrical Equip Ltd
192 Princes Hwy
590291
- AUSTRIA**
A-2345 Brunn Am Gebirge
Kontron GmbH & Co Kg
Industriestrasse B13
02236/86-6-31
- BRAZIL**
Sao Paulo
Comercial Goncalves
Av Senador Queiroz 305
227-3564
- COLOMBIA**
Bogota
Elcam Ltda
Apartado Aereo 53286
256-7583
- DENMARK**
DK-2850 Naerum
SC Metric A/S
Skodsborgvej 305
02 804200
- ENGLAND**
London
Euro Electronic Instr Ltd
Shirley House 27 Camden Rd
01-267-2748/9
- FINLAND**
02101 Espoo 10
Finn Metric OY
PL35
460844
- FRANCE**
Velizy Villacoublay
Kontron Electronique
BP 99 6 Rue Des Freres; Caudron
946 97 22
- GERMANY, WEST**
Munich
Kontron Elektronik GMBH
Breslauer Str 2
089 31901-221
- GREECE**
Athens
E A C
Box 622
01 360-0653
- HONG KONG**
Hong Kong
Gilman & Co Ltd
Box 56
342-7144
- INDIA**
Bombay
Matwane Private
127 Mahatma Gandhird
273845
- ISRAEL**
Tel Aviv
Eastronics
11, Rozanis St
475-151
- ITALY**
Milan 20090, Segrate
Radiel SPA
Residenza Degli Archi 22
02 213-3056
- JAPAN**
Tokyo
Toyo Corp
Nihانبashi Chuo-Ku
03-279-0771
- KOREA REP (REP)**
Seoul
KDC Corporation
Box 5956
738236
- MALAYSIA FED OF**
Kuala Lumpur
Wira Kris Engineering Sdn Bhd
Suite 5.02 Wisma Central
483719
- MEXICO**
Mexico
Fonkel Mexicana SA De CV
Hamburgo No 70-305
511-16-20
- NETHERLANDS**
The Hague
Hollinda BV
Eisenhowerlaan 112
070 512801
- NEW ZEALAND**
Auckland
G T S Engrg
Balm & Nuffield New Market
546745
- NORWAY**
Oslo
Metric A S
Ekebergvn 3
02-28 26 24
- PHILIPPINES**
Philippines
CELEASCO
Box 7171 Manila Airport
888981
- SINGAPORE**
Singapore
Singapore Electronic & Engrg
Sembawang Box 16
257-0211
- SOUTH AFRICA**
Johannesburg 2001
S'Electronics
Box 70050 Bryanston
488718
- SPAIN**
Madrid
EMECO SA
Caidos de la Division Azul 1-F
01 458-0645
- SWEDEN**
Ostmarksgatan
Ingenjorsfirman Gunnar Pettersson
AB
S-123 21 FARSTA
08/93 02 80
- SWITZERLAND**
Zurich
Tectra A G
Dufourstrasse 165
01 539910
- SWITZERLAND**
Glattbrugg
Weiss Instruments
Box CH-8152
01 8101441/2
- TAIWAN**
Taipei
Multitech International Corp
977 Min Shen E Rd
768-1232
- THAILAND**
Bangkok
Teo Hong Ltd Partnership
Box 710
233-1721
- VENEZUELA**
Caracas
Sumasel CA
Apdo 66584 Las Americas
572-8843
- DSG INC.**
Dept. DC-18; 1737 Chestnut St.
Philadelphia, PA 19103
215-564-6310
Contact: M Ron Duies Jr
- DTSS INCORPORATED**
10 Allen St
Hanover, NH 03755
603-643-6600
Contact: Robert Hargraves
■ Products & Services
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Timesharing/service bureaus
- DURANGO SYSTEMS INC**
3003 N First St
San Jose, CA 95134
408-946-5000
Contact: Tim Fondiller
■ Products & Services
DDP systems
Batch terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Branch Sales Offices:
AL Montgomery
Professional Bus Systems Inc
4249 Lomac St
205-279-7772
AZ Phoenix
Canyon Business Systems
720 W Indian School Rd
602-265-0200

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

CA Fresno
Lincoln Computer Mgmt Sys
4221 W Sierra Madre S 204
209-268-9751

CA Torrence
Falcon Systems
19401 S Vermont
213-DURANGO

CA San Luis Obispo
Cuesta Systems
3440 Roberto Ct
805-541-4160

CA Laguna Hills
California Business Systems Inc
25283 Cabot Rd
714-581-9560

CA San Jose
Durango Systems
3003 North First Street
408-946-5000

CA San Francisco
Mitsui & Co
One California St
415-981-2277

CO Denver
Colorado Bus Systems
7475 Dakin St
303-427-9711

CT Wallingford
OFFIS Corp
1000 Yale Ave
203-265-3921

FL Miami
Professional Computer Corp
1515 NW 167th St
305-625-1433

HI Honolulu
Data Solutions HI Inc
738 Kaheka St
808-955-6319

IL Downers Grove
Falcon Systems
1100 31st St
312-960-4390

IN Sellersburg
S I Computer Services Inc
110 N Indiana Ave
812-246-3356

KS Wichita
Main Electronics Inc
225 Ida
316-267-3581

LA Morgan City
MC Computer Sales
Box 1786
504-385-2930

MA Framingham
Star Systems Inc
693 Cochituate Rd
617-235-8900

MI Farmington Hills
Central Data Systems Inc
23880 Industrial Pk Dr
313-478-7000

MN Edina
Computer Central
7300 Metro Blvd
612-830-1122

NV Reno
Sierra Office Concepts
955 S Virginia
702-786-7681

NJ Cranford
Independent Financial Agents Inc
111 N Ave W
201-276-5220

NM Santa Fe
The SES Group
3375 Cerrillos Rd
505-471-3672

NY New York
Interactive Computer Systems
312 E 23 St
212-677-7222

NC Greensboro
ADS Data Systems Inc
Friendship Center Of Pk
919-294-4080

OK Oklahoma City
Threshold Data Systems
4802 N MacArthur
405-787-0464

OR Portland
Western Star Business Systems
5520 SW Macadam
503-241-7697

PA Blue Bell
Bus Info Systems
1777 Walton Rd
215-643-6636

PA Clarks Summit
Computer Concepts Inc
224 Holly Ln
717-587-5022

TX Houston
Sunbelt Data Services Inc
5855 Sovereign Dr
716-777-6515

TX Dallas
Falcon Systems
13612 Midway
214-385-1975

UT Salt Lake City
Xerographic Equip
2273 S 300 West
801-486-5195

VA Roanoke
Automated Data Systems Inc
3016 Franklin Rd SW
703-344-6818

VA McLean
Simcon Inc
7655 Old Springhouse Rd
703-734-1202

WI Milwaukee
Doyle Data Systems Inc
740 N Plankinton Ave
414-271-5688

ONTARIO, CANADA
Don Mills ON
Norango Computer Systems Inc
801 York Mills Rd
416-449-2761

ARGENTINA
Buenos Aires
Hasler Argentina SAIC
Jose E Uriburu 754 6 Piso
47-9722-3560

AUSTRALIA
Wollstonecraft
Rockend Pty Ltd
7 Cable St
02-438-1418

COLOMBIA
114 Bogota 1
International Computer Machines
Box 19403
011-57-245-6010

ENGLAND
Egham Surrey TW20 9EY
Computer Ancillaries Ltd
64 High St
011-44-78436455

HONDURAS
Tegucigalpa
Durango Systems Inc
Merinter S de RL

JAPAN
Chiyoda-Ku Tokoyo
Mitsui & Co Ltd
2-1 Ohtemachi 1-Chome
03-285-4155

NETHERLANDS
Nijmegen 6503 GC
Computron Nederland BV
Box 6647
011-31-80-562714

PANAMA
Panama 5
Electronico Balboa SA
Aptdo 4929
64-2700

SOUTH AFRICA
Randburg
Tecnetics (Pty) Ltd
Box 56412; Pinegowrie 2123
27-11-789-1211

SPAIN
Madrid
Desktop Data Systems
Serrano 49-2-A Planta
91-275-63-20

SWEDEN
Solna
Juegen Weigle
Swerango AB Backvagen 10
8-7302807

SWITZERLAND
Bern
Interest AG
Aabergergasse 46
031-22-44-81

URUGUAY
Montevideo
Guillermo Kraft del Uruguay SA
Av Libertador; Brig Gral
Lavalleya 2083
2-45-88

WEST INDIES
Port of Spain
Mini Computer Acct Ltd
74 Tragarete Rd
62-25362

DYNATECH DATA SYSTEMS
7644 Dynatech Ct
Springfield, VA 22153
703-569-9000
Advertising page 84
Contact: Vaughn Darnell
■ Products & Services
Modems, limited distance
Modem eliminators
EIA cable testers
Protocol analyzers
Technical control centers
Data jacks and plugs
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment

Branch Sales Offices:

AZ Scottsdale
Barnhill Three Inc
7319 E Stetson Dr
602-947-7841

CA Redondo Bch
Dynatech Data Systems
2514 Graham Ave
213-542-1702

CA Mt View
CSS Telecommunications Inc
2680 Bayshore Frontage Rd
415-964-4335

CA Los Alamitos
CSS Telecommunications Inc
10915 Bloomfield St
213-594-4574

FL Englewood
Barnhill Three Inc
7076 S Alton Way Bldg A
303-779-3600

FL Albuquerque
Barnhill Three Inc
1410D Wyoming NE
505-299-7658

IL Bloomingdale
Dynatech Data Systems
113 Fairfield Way
312-351-0666

IL Grays Lake
I B C Data Systems
30360 N Chardon LN
312-546-6262

MD Rockville
Wiltronix
5504 Waterway
301-460-1454

MA Wakefield
Instrument Dynamics Inc
Lakeside Office Pk
617-245-5100

MI Ann Arbor
ARC Electronic Assoc
2500 Packard Ave #202
313-973-1133

MN Eden Prairie
Scientific Devices-Minn
7032 Willow Creek Rd
612-944-3515

NJ East Orange
Friedman Associates
134 Evergreen Pl
201-673-2500

OH Cleveland
ARC Electronic Associates
21330 Center Ridge Rd
216-333-8375

OH Miamisburg
ARC Electronic Assoc
228 Byers Rd
513-859-3040

OR Seattle
CSS Telecommunications Inc
8609 Roosevelt Way NE
206-527-4750

PA Framingham
Dynatech Data Systems
33 Dinsmore Ave
617-872-5777

TX Arlington
Dynatech Data Systems
617 W Main St
817-265-6101

TX Richardson
Barnhill Two Inc
1101 Executive Dr E
214-231-2573

UT Murray
Barnhill Three Inc
5180 S 300 West
801-262-3000

WA Seattle
CSS Telecommunications Inc
8609 Roosevelt Way NE
206-527-4750

ONTARIO, CANADA
Scarborough
ATELCO
3530 Pharmacy Ave
416-497-2208

FRANCE
Rungis, Cedex
Dynatech Data Communications
143 Rue de la Tour, Centra 120
687-0579

MEXICO
Datos En Linea SA
Cantu 9-105 Col Anzures
905-531-0329

EASTMAN KODAK CO
343 State St
Rochester, NY 14650
■ Products & Services
Microfilm equipment, systems and services

EATON-LRC
Technical Research Pk
Riverton, WY 82501
307-856-4821
Contact: Joe Dennis
■ Products & Services
Remote line printers
Teleprinters, impact

Branch Sales Offices:

CA Glendale
Eaton-LRC
1310 Air Way
213-956-0147

CA Sunnyvale
Eaton-LRC
1115 E Arques
408-245-1591

IL Elmhurst
Eaton-LRC
188 Industrial Drive
312-279-8220

KS Shawnee Mission
Eaton-LRC
6803 W 64th Clover Leaf
913-262-2199

MI Detroit
Eaton-LRC
26847 Grand River
313-535-3630

NJ Montville
Eaton-LRC
130 Pine Brook Rd
201-334-3838

NY Rochester
Eaton-LRC
300 White Spruce
716-442-3440

NC Charlotte
Eaton-LRC
4108 Park Rd
704-525-3140

OH Cincinnati
Eaton-LRC
Roselawn Center Bldg
513-531-5073

OH Cleveland
Eaton-LRC
24800 Chagrin Blvd
216-464-8787

TX Houston
Eaton-LRC
202 North Loop W
713-868-2363

WI Watertown
Eaton-LRC
901 S 12th
414-261-4070

QUEBEC, CANADA
Pt Claire
Eaton-LRC
6600 Transcanada Hwy
514-697-1024

ENGLAND
Richmond, Surrey
Russett Instruments
RIL House Sheen Pk
01-9409981/2

ECS MICROSYSTEMS
215 Devcon Dr
San Jose, CA 95112
408-286-4200
Contact: Jim Tedrick
■ Products & Services
DDP systems
Programmable terminals
Word processors, communicating

Branch Sales Offices:

CA San Jose
ECS Microsystems Inc
215 Devcon Dr
408-286-4200

FL Treasure Island
ECS Microsystems Inc
9491 W Gulf Blvd
813-360-6447

MN Minneapolis
ECS Microsystems Inc
9001 E Bloomington Frwy
612-290-3066

NJ Englewood Cliffs
ECS Microsystems Inc
333 Sylvan Ave
201-894-0242

TX Dallas
ECS Microsystems Inc
13777 N Central Expwy
214-238-1751

EDGE TECHNOLOGY
2735 SE Raymond St
Portland, OR 97202
503-231-1057
Contact: Margie Colburn
■ Products & Services
Disc drives, floppy
Floppy disc recorders
Code converters
Protocol converters

EECO INCORPORATED
1601 E Chestnut Av
Santa Ana, CA 92701
714-835-6000
Contact: Jack Fahy
■ Products & Services
Tape punch/reader, paper
Switches, data communications, manual

Branch Sales Offices:

AL Huntsville
Montgomery Marketing Inc
12021 S Memorial Pkwy
205-883-9901

AZ Phoenix
Cleveland Enterprises
8900 North Central
602-944-4679

CA Los Altos
Recht Associates
2251 Grant Rd
415-964-6321

CA San Diego
Martek
3255 Wing St
714-223-2631

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

CA Ventura
Thorson Co
340 S Kellogg Ave
805-964-8751

CO Littleton
Lange Sales Inc
5575 S Sycamore
303-795-3600

CT Farmington
Kay Perron
10 Briarwood Rd
203-673-4825

FL Altamonte Springs
Semtronic Assoc Inc
343 Whooping Loop
305-831-8233

IL Elk Grove Village
Oasis Sales
1101 Tonne Rd
312-640-1850

IN Fort Wayne
M/S Sales & Assoc
2100 Goshen Rd
219-484-1904

IN Indianapolis
Beeco
1049 E Michigan St
317-632-4612

LA Baton Rouge
Col-Ins-Co
11814 Coursey Blvd
305-423-7615

MD Rockville
Electronic Marketing Assoc
11716 Parklawn Dr
301-881-5300

MI Farmington Hills
Lowell-Wendt Marketing Co
27650 Farmington Rd
313-553-9800

MN Bloomington
Electronic Sales Agency
8053 Bloomington Frwy
612-884-8291

MO Hazelwood
Palatine Sales Inc
346 Brookes Dr
314-895-4577

NJ Englewood
Tecnimat
500 Grand Ave
201-569-4200

NY Endicott
Tech-Mark Inc
101 Jefferson Av
607-748-7473

OH Aurora
EMA
337 E Garfield Rd
216-562-6104

TX Dallas
Electra Reps Inc
14675 Midway Rd
214-387-3594

WA Seattle
Blair Hirsh Co
4013 Leary NW
206-783-3423

BRITISH COLUMBIA, CANADA
Richmond
Robet Eakin Co
Box 94477
604-271-0610

ONTARIO, CANADA
Rexdale
Frank Eakin Ltd
81 Kelfield St
416-245-3600

ENGLAND
Cambridge
EECO
25 Viking Way
0954-80257

EIP MICROWAVE INC
2731 North First St
San Jose, CA 95031
408-946-5700
Contact: H Lurie
■ Products & Services
Electrical-parameters test equipment

ELECTRODATA INC
23020 Miles Rd
Bedford Heights, OH 44128
216-663-3333
Contact: Phil Ardire
■ Products & Services
Line sharing units
Acoustic couplers
Lightwave (fiber optic) systems
Modem eliminators
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Cables, electrical prefabricated extending
Cables, lightwave (optical fiber)
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, manual

Branch Sales Offices:

AL Madison
FM Associates Ltd
9694 Highways 20 West
205-536-9990

CA El Granada
DCM
532 Palma
415-726-6326

CA Long Beach
CTI Data Systems
3480 E Spring St
213-426-7375

CO Englewood
Barnhill Three Inc
7076 S Alton Way
303-779-3600

CT Wallingford
IMF Sales Associates
200 Mansion Rd
203-265-0215

DC Linthicum Hgts
KD Assoc
201 Benton
301-636-1151

FL Orlando
FM Associates
5018 Mortier Ave
305-851-5710

GA Atlanta
FM Associates
2060 Peachtree Ind Ct
404-451-2293

IL Wheeling
IBC Data Systems
925 N Milwaukee
312-459-8866

KS Shawnee
Inland Associates
7975 West 63rd St
913-362-2366

MD Edgewater
Commart Inc
3910 West Shore Dr
301-261-4344

MA Wakefield
IMF Sales Associates
Lakeside Office Park
617-245-8900

MI Ann Arbor
ARC Assoc
2500 Packard Ave
313-973-1133

MN Minneapolis
RAE Assoc
7317 Cahill Rd
612-835-2100

MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742

NJ Cherry Hill
Megargel/Himmelstein Assoc
2428 Rt 38
609-779-0200

NJ Harrington Pk
Glasgal Communications
103 First St
212-687-2455

NY DeWitt
DB Associates
3307 Erie Blvd East
315-446-0220

NY DeWitt
DB Assoc
3307 Erie Blvd
315-446-0220

NC Ramseur
FM Associates
106 Elam Ave
919-824-2196

OH Rocky River
ARC Assoc
21360 Center Ridge Rd
216-333-8375

OR Lebanon
DPM Inc
34893 Bond Rd
206-453-9082

PA Pittsburgh
ARC Assoc
160 N Craig St
412-681-8609

WA Bellevue
DPM Inc
15935 NE 8th St
206-747-3309

ONTARIO, CANADA
Ottawa
Louis Albert Assoc Inc
2264 Stevenage Dr
613-737-5941

FRANCE
Sevres
Tekelec Airtronic
BP No 2
(1) 534-75-35

GERMANY, WEST
Koln
Telonic Industries
Friedrichstrabe 14-16
02203-53001

MALAYSIA FED OF
Kuala Lumpur
Racal Electronics (May) SdnBhd
Fitzpatrick Bldg
486407/482779

SINGAPORE
Racal Electronics (Sing) PteLtd
1&2 Magazine Rd
984211/2230013

SWITZERLAND

Geneva
Interep SA
4 Cours des Bastions
022/208346

ELECTRONIC INTERFACE ASSOC INC

38 E 29 St
New York, NY 10016
212-683-9100
Contact: George Engel
■ Products & Services
Minicomputers
Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Port selectors
Port sharing units
Remote network processors
Acoustic couplers
Digitized-voice processors
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Modem eliminators
Data content monitors
EIA cable testers
Error rate detectors
Protocol analyzers
Response-time monitors
RTS emulator
Network management centers
Technical control centers
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Batch terminals
Facsimile terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Code converters
Computer/communications interfaces
Data access arrangement devices
Data compression devices
Data jacks and plugs
Data security devices, encoder/decoders
Error controllers
Furniture, cabinets, terminal enclosures
Protocol converters
Pulse and signal regenerators
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment

Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations
Used equipment

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

ELECTRO RENT

4209 Vanowen Pl
Burbank, CA 91505
213-843-3131
Contact: Renard J Tarullo
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Graphic display terminals
Programmable terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Lease and resale organizations

Branch Sales Offices:

CA Mountain View
Electro Rent Corp
2230 Charleston Rd
415-964-5500
CA Santa Ana
Electro Rent Corp
2800 S Main
714-979-5620
CA Burbank
Electro Rent Corp
4131 Vanowen Pl
213-843-3131
CA San Diego
Electro Rent Corp
5490 Complex Dr
714-571-7905
FL Orlando
Electro Rent Corp
771 Kirkman Rd
305-299-6701
GA Atlanta
Electro Rent Corp
3951 Pleasantdale Rd
404-499-4800
IL Elk Grove
Electro Rent Corp
1699 Elmhurst Rd
312-956-8380
MD Beltsville
Electro Rent Corp
10232 Southard Dr
301-792-0448
MA North Billerica
Electro Rent Corp
12 Republic Rd; Treble Cove
Indust Pk
617-273-2165
MI Livonia
Electro Rent Corp
12894 Farmington Rd
313-522-8550
NJ Cedar Grove
Electro Rent Corp
216 Little Falls Rd
201-857-2280
TX Dallas
Electro Rent Corp
12011 Coit Rd
214-387-3703
TX Houston
Electro Rent Corp
3810 Westheimer
713-961-9525
WA Seattle
Electro Rent Corp
859 Industry Dr
206-575-1536

ELGAR CORP

8225 Mercury Ct
San Diego, CA 92111
714-565-1155
Advertising page 146
Contact: John J Waterman
■ Products & Services
Power supplies
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AL Huntsville
Pen-Tech Assoc Inc
3322 Memorial Pkwy SW
205-881-9298
AK Anchorage
Windier Company
4241 "B" St
907-276-4393
AZ Tempe
Trembley Assoc
Box 27468
602-967-2058
CA Redondo Beach
Ward/Davis Assoc
2615 Manhattan Beach Blvd
213-973-7772
CA San Diego
Ward/Davis Assoc
7263 Engineer Rd
714-292-1000
CA Escondido
WLB Assoc
19995 Elfin Forest Rd
714-744-1122
CA San Jose
D P Assoc
4010 Moorpark Ave
408-296-1492
CO Arvada
Emcar Marketing Inc
8041 W I-70 N Frontage Rd
303-424-0108
CT North Haven
Pat Jenks Assoc Inc
52 Washington Ave
203-239-6201
FL Maitland
Pen-Tech Assoc Inc
111 S Maitland Ave
305-645-3444
FL Deerfield Beach
Pen-Tech Assoc Inc
201 SE 15 Tr
305-421-4989
GA Manelita
Pen-Tech Assoc Inc
627 Cherokee St
404-424-1931
IL Arlington Heights
Dytec-Central Inc
315 West University Dr
312-394-3380
IL Indianapolis
Dytec/Central Inc
25 Beachway Dr
317-247-1316

KS Lenexa
Dytec/South Inc
8245 Nieman Rd
913-888-0215

MD Rockville
Electronic Marketing Assoc Inc
11716 Parklawn Dr
301-881-5300

MA Holbrook
McLellan Assoc
Box 328 63 Cedar Hill Rd
617-767-4771

MA Wakefield
Pat Jenks Assoc Inc
607 N Av
617-246-1590

MI Madison Heights
WKM Assoc Inc
345 W Girard
313-588-2300

MN Minneapolis
Berndt Assoc Inc
8633 Harrison S
612-835-4818

MO Hazelwood
Dytec/South Inc
320 Brookes Dr
314-731-5400

NM Albuquerque
Trembly Assoc
119 Quincy NE
505-266-8616

NY Great neck
Measurement Tech
159 Northern Blvd
516-482-3500

NY Syracuse
Naco Electronics Corp
Box 276
315-699-2651

NY Utica
Naco Electronics Corp
2631 Edgewood Rd
315-732-1801

NY Fairport
Naco Electronics Corp
6780 Pittsford-Palmyra Rd
716-223-4490

NC High Point
Pen-Tech Assoc Inc
1202 Eastchester Dr
919-883-9125

OH Cleveland
WKM Assoc Inc
16141 Puritas Av
216-267-0445

OH Dayton
WKM Assoc Inc
7913 S Suburban Rd
513-434-7500

OR Portland
Pacific Northwest Electronics
2036 SW 58 Ave
503-292-3505

PA Plymouth Meeting
Electronic Marketing Assoc Inc
649 W Germantown Pike
215-828-7400

PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953

TX Dallas
Data Aids Assoc
2880 LBJ Freeway
214-620-1551

TX Houston
Data Aids Assoc
1440 North Loop
713-862-6685

UT Sandy
Emcar West Inc
10493 Dimple Dell Rd
801-943-1240

WA Bellevue
Pacific Northwest Electronics
14264 SE Eastgate Way
206-641-6444

PUERTO RICO
San Juan
Computec Systems Corp
Box 1429
809-781-7880

BRITISH COLUMBIA, CANADA
Vancouver, N
Jerome & Francis Co Ltd
Box 86549
604-980-4831

ONTARIO, CANADA
Richmond
Interfax Systems Inc
Box 880
613-838-3187

QUEBEC, CANADA
Montreal
Interfax Systems Inc
2800 Sabourin
514-336-0430

ARGENTINA
1233 Buenos Aries
Iota SACIFIA
Ave San Juan 3047
97-9111

AUSTRALIA
South Melbourne Vic
Warburton Franki Ind
220 Park St
60-94999

AUSTRIA
Brunn AM Gebirge
Kontron GMBH Und Co KG
Industriestrasse B 13
02236/86/6/31

BELGIUM
Brussels
C N Rood S A
Place De Jamblinne De Meux 37
02/735.21.35

CHILE
Santiago
Coasin Chile Ltda
Cas 14588; Correo 21
8214

COLOMBIA
Bogota
Ingenieria Electronica Diselec
Av Caracas #37-20
2-85-14-93

COSTA RICA
San Pedro
Electrotecnica SA
Apartado 15
21-32-42

DENMARK
DK-2750 Ballerup
Tage Olsen A/S
Box 225; Ballerup Byvej 222
2-65-81 11

ECUADOR
Quito
Celco CIA Ltda
Box 4093
544497

ENGLAND
Middlesex
MPL
Belvedere Works-Bilton Way; Pump
Lane Ind Estate; Hayes UB3 3ND
01-848-9871

ENGLAND
Reading Berks
Wavetek Electronics Ltd
109 Crockhamwell Rd Woodley
Reading 0734 (694944)

FINLAND
Kauniainen
Oy Findip AB
Teollisuustie 7; Box 34
90-502255

FRANCE
Buc
MB Electronique
Rue Fourny-ZAC de BUC BP No 31
956.81.31

GERMANY, WEST
8 Munchen 71
Wavetek Electronics GmbH
Wolfratshauser Strasse 169
089 79-49-50

GERMANY, WEST
8057 Eching B Munich
Kontron Elektronik GMBH
Breslauer Str 2
89 21 88-1

GREECE
Athens 612
Hellenic Scientific Rep Ltd
11 Vrassida St
711.140/713.154

GUATEMALA
Guatemala City
Guatemala Tecnica SA
Calzada Aguilar Batres 38-56
48-1002

HONG KONG
Hong Kong
Gilman & Co Ltd
Box 56; Electronics Dept
3-427144

INDIA
New Delhi
Indian Avitronics
10 Hailey Rd
110001 44301

INDIA
Selatan
P T Indo Kappa Elektroteknik
Indoplano Group; Box 424/KBY
42796-41952

ISRAEL
Tel Aviv
Racom Electronics Co Ltd
Box 21120
03-453151

ITALY
Milano
Sistrel SPA
Via Pelizza da Velpedo 59
6181893

ITALY
Rome
Sistrel SpA
Via Guiseppe Armellini 37
5915551

JAPAN
Tokyo
Toyo Corp
Box 5014; Tokyo International
279 0771

KOREA REP (REP)
Seoul
Saetong Trading Co Ltd
Box 3590
72-0619

LIBERIA

Monrovia
Horst Thimmig Industrial
Engineering
Box 1444
22797

MALAYSIA FED OF

Singapore 9012
Rank O'Connors Singapore Pte Ltd
PO Box 615
637944

MEXICO

Mexico 12
Mexitek SA
Eugenia 408 Deptos 1 y 5
APDO Postal 1012
905 536-09-10

MEXICO

Mexico
Maquinaria IGSA SA
Paseo de la Reforma #5287
570-35-88

NETHERLANDS

Rijswijk 2100
C N Rood B V
11-13 Cort Van der Lindenstraat
070-99-63-60

NETHERLANDS ANTILLES

Curacao
Industrial Electronics (ANT) NV
Centro Comercial Antilia 1
37201/02

NIGERIA

Lagos
Earth Sciences Ltd
Box 6352
43233

NIGERIA

Ibadan
Joint Komputer Konsultancy Ltd
21 Ondo St; PO Box 3194-Bodija
Estate

NORWAY

Norway
Teleinstrument AB
Box 134; 1371 Asker
02-78-94-60

PHILIPPINES

Makati Metro Manila
Cardinal Electronics Corp
201 Salcedo St
88-24-78/88-70-97

PORTUGAL

Lisbon
Financeira Docomercio Exterior
SARL
Avenida Da Liberdade 190-4
54-99-73

SAUDI ARABIA

Jeddah
Bugshan Corp
C R 8825; Box 5880
34193

SOUTH AFRICA

Transvaal
Biowave Electronics Pty Ltd
Box 78502; Sandton 2146
783-5400

SPAIN

Madrid-14
Kontron SA
Apartado De Correos 14.396
7-34-84-13

SWEDEN

Vallingby
Teleinstrument AB
Box 490 Maltesholmsvagen 138
08/38/03 70

SWITZERLAND

Zurich
Precitek Electronic AG
Weinbergstrasse 148
01-3632188

TAIWAN

Taipei
Don Business Corp
Box 36329
5817623/5712911

THAILAND

Bangkok-11
Dynamic Supply Engineering ROP
#56 Ekami; Sukhumvit 63
3914434/3928532

TURKEY

Yenisehir-Ankara
Tifa Electronics
Box 3
17 6 57/27 37 27

VENEZUELA

Caracas 106
Teva
Apartado 60.656
61-56-58/61-87-51

Stay up-to-date with new catalog
information and new product
announcements.
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page 201.

EMERSON INDUSTRIAL CONTROLS
DIV

3300 S Standard St
Santa Ana, CA 92702
714-545-5585
Contact: Frank R Chandler
■ Products & Services
Tape drives, magnetic
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

CA Santa Ana
Emerson Ind Controls Div
3300 S Standard
714-545-5585

MO St Ann
Emerson Ind Controls Div
11037 Easy St
314-291-4535

NJ Palisades Park
Emerson Ind Controls Div
321 Commercial Av
201-224-6306

OH Perrysburg
Emerson Ind Controls Div
136 W South Boundary St
419-874-2223

VA Richmond
Emerson Ind Controls Div
5407 Lakeside
804-264-2528

EMM PERIPHERAL PROD DIV

1015 Timothy Dr
San Jose, CA 95133
408-298-7080
Contact: Denman Kessler
■ Products & Services
Cartridges
Cartridge drives
Disc drives, large
Disc packs

Branch Sales Offices:

IL Desplaines
EMM Peripheral Prod Div
1400 East Touhy
312-297-3110

NJ Clifton
EMM Peripheral Prod Div
1611 Clifton Ave
201-777-4404

ENA DATASYSTEMS INC

268 Galaxy Blvd.
Rexdale, ON M9W 5R8
416-675-3304
Contact: Michael D Mayhue
■ Products & Services
Concentrators
Message switchers
Inverse multiplexers
Multiplexers, statistical (intelligent)
Packet processors
Port selectors
Port sharing units
Acoustic couplers
Digital service units
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Data content monitors
Network management centers
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Data communications consultants

EPIC DATA CORP

7280 River Rd
Richmond, BC V6X1X5
604-273-9146
Contact: Brian Lowe

■ Products & Services
Concentrators
Front-end processors
Line drivers
DDP systems
Cassette drives
Disc drives, floppy
Badge readers
Bar code readers
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Terminal controllers

Branch Sales Offices:

AZ Scottsdale
BFA Corp
4426 N Saddlebag Tr
602-994-5400

CA Anaheim
Moxon Electronics
1440 S State College Blvd
714-635-7600

CA Hacienda Heights
Epic Data Corp
1724 S Heather Hill Rd
213-965-2886

FL Orlando
COL-INS-Co Inc
Box 13189
305-423-7615

IL Downers Grove
Epic Data
3415 Hickory Tr
312-968-8620

IL Elk Grove Village
SMC Inc
1501 Carmen Dr
312-593-6220

MD Rockville
T E Corp
701 East Gude Dr
301-340-0303

MA Winchester
J & J Assoc Inc
255 East St
617-729-5770

MO Grandview
Digital Systems Sales
4006 136 Terrace
816-765-3337

NY Mamaroneck
Cane Technical Sales
1032 Mamaroneck Ave
914-698-4411

NY E Syracuse
Ossman Instruments
6666 Old Collamar Rd
315-437-6666

PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953

ENGLAND
Reading, Berkshire
Sintrom Ellinor Ltd
14 Arkwright Rd
0734-85464

EPICOM INC

592 N Douglas Ave
Altamonte Springs, FL 32701
305-869-5000

Contact: LeRoy C Ostrander

■ Products & Services

MIL 188C adapters

Data content monitors

Error rate detectors

Protocol analyzers

Technical control centers

Selection & transfer equipment, monitor &
test switching equipment

Selection & transfer equipment, patching
equipment

Branch Sales Offices:

AL Birmingham
Dallis and Assoc
Box 4066
205-595-0451

CA Los Alamitos
CSS Telecommunications
10915 Bloomfield
213-431-4865

CA Sunnyvale
Inter-Link Systems
580 Weddell
408-744-1930

CA Mission Viejo
Epicom Inc
27666 Esla
714-770-5152

CT Northford
EPICOM Inc
35 Footshill Rd
203-484-0211

FL Orlando
FM Associates Ltd
5018 Mortier Ave
305-851-5710

FL Jupiter
FM Associates Ltd
110 Yacht Club Pl
305-746-2996

GA Decatur
Dallis and Associates
2395 Burnt Creek Rd
404-636-8533

IL Des Plaines
EPICOM Inc
220 E Devon Ave
312-298-9337

MD Baltimore
Epicom Inc
6100 Baltimore National Pike
301-747-5777

MA Woburn
EPICOM Inc
139 New Boston Pk
617-933-3688

MI Ann Arbor
W C Koepf Assoc
2321 Lancashire
313-459-9150

NE Copenhagen
Aage Hempel International A/S
Havnegade 39, DK-1058
01-126767

NJ New York
Epicom Inc
2 Penn Plaza
212-279-1919

NM Albuquerque
Data Handling Co Inc
218 Manzano NE
505-268-4364

NC Charlotte
Dallis and Associates
Box 240824
704-527-2530

OH Chagrin Falls
W C Koepf Assoc
68 Olive St
216-247-5129

OH Spring Valley
W C Koepf Assoc
1245 Night Hawk Trail
513-733-8555

TX Dallas
Epicom Inc
14500 Dallas Parkway
214-980-9782

ONTARIO, CANADA

Ottawa
Comtest Communications Products
Ltd
374 Britannia Rd
613-828-5236

AUSTRALIA

Victoria 3133
The Dindima Group Pty Ltd
Box 106, Vermont
61-3-873-4455

ENGLAND

Berkshire
EPICOM Inc
Kingswick House, Sunninghill
990-23491

ENGLAND

Surrey
Master Systems (Data Products)
Ltd
100 Park St Camberley
0276-28527

INDIA

Bombay 400-018
Hind Ind & Merc Corp Private Ltd
205A Dr Annie Besant Rd
373544

ISRAEL

Tel Aviv
Bitcom Agencies Ltd
Devorah Hanviah St
416-292-1475

ITALY

Milano
Elesys SRL
Via Donati 6, 20146
02-4239920

JAPAN

Tokyo
Sumitomo Corp
2-2 Hitotsubashi
1-chome; Chiyoda-Ku
03-217-6340

MEXICO

Mexico 17 DF
Transdata SA
Mar Jonico 50-B
903-399-9800

NETHERLANDS

Haag
Repko BV
PB 63439; 2502 JK Den
070-469508

NEW ZEALAND

Wellington
High-Tech
99-101 Willis St
845-454

SWEDEN

Sundbyberg
Heath & Co AB
Loetsjoevaegen 17-19
08-289480

SWITZERLAND

Lausanne
Nucletron SA
11, Ch G de Frangins; CH 1004
021-252423

LM ERICSSON

TELECOMMUNICATIONS

100 Crossways Park West

Woodbury, NY 11797

516-364-1111

Contact: James R Brunner

■ Products & Services

Lightwave (fiber optic) systems

Microwave/laser systems

Modems, voice-grade, low-speed

(0-1,200 b/s)

Modems, voice-grade, medium speed

(1,800-3,600 b/s)

Modems, voice-grade, high-speed

(4,800-9,600 b/s)

Stay up-to-date with new
catalog information and new
product announcements.
Turn to **UpDate Service Card**,
page 201.

ESTERLINE ANGUS INSTRUMENT CORP

PO Box 24000
Indianapolis, IN 46224
317-244-7611
Contact: Wm E Calbert
■ Products & Services
Front-end processors
Multiplexers, group band
Database processors
Power supplies

Branch Sales Offices:

- CA Walnut
Esterline Angus
329 Paseo Sonrisa
714-594-5721
- CA Hayward
Esterline Angus
3401 Investment Blvd #8
415-785-8232
- IL Elmhurst
Esterline Angus
188 Industrial Dr
312-833-4410
- MA Framingham
Esterline Angus
223 Walnut St
617-235-5343
- NJ Paramus
Esterline Angus
11 MacKay Ave
201-368-0666
- PA Spring House
Esterline Angus
Gwynedd Plaza
215-628-4211
- TX Houston
Esterline Angus
10161 Harwin
713-270-8000

E-SYSTEMS INC.**ECI DIV.**

1501 72nd St. N
St. Petersburg, FL 33733
813-381-2000
Contact: Kenneth L. Carlson
■ Products & Services
Front-end processors
Multiplexers, frequency division
Packet processors
Digitized-voice processors
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Data entry terminals
Digital plotters
Remote line printers
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Voice digitizers

E-SYSTEMS INC.**GARLAND DIV**

1200 Jupiter Rd
Garland, TX 75040
214-272-0515
Contact: Charles Hatton
■ Products & Services
Digital service units
Digitized-voice processors
Modems, limited distance
Modems, multipoint
Modems, multiport

Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Facsimile terminals
Graphic display terminals
Programmable terminals
Voice digitizers

Branch Sales Offices:

- CA Van Nuys
E-Systems Inc
5430 Van Nuys Blvd
213-986-9963
- FL Ft Walton Beach
Focoin Inc
233 Yacht Club Dr NE
904-243-0127
- GA Warner Robins
E-Systems Inc
Drawer ii
912-923-3616
- MA Lexington
E-Systems Inc
9 Meriam St
617-861-9050
- MO St Louis
E-Systems Inc
11933 Westline Indus Dr
314-576-1770
- NJ Tinton Falls
E-Systems Inc
776 Shrewsbury Av
201-747-3101
- NY Rome
E-Systems Inc
Box 767
315-336-1911
- OH Dayton
E-Systems Inc
5030 B Broughton Pl
513-254-8464
- OK Oklahoma City
E-Systems Inc
Box 15420
405-737-7610
- VA Arlington
E-Systems Inc
1901 N Moore St
703-524-2310
- VA Hampton
E-Systems Inc
Box K Riverdale Sta
804-838-2010
- BELGIUM**
Brussels
E-Systems Inc
Box 2 Ave de Colombie 10
672-2320
- ITALY**
Rome
E-Systems Inc
Via di Sanaorina/00196
396-6398
- JAPAN**
Tokyo
E-Systems Inc
Room 401 Tanaka Bldg 1-15-4
Nishi Azabu Minato-Ku
03-402-1367
- VENEZUELA**
Caracas 1015-A
E-Systems Inc
Apartado 17474
915-674

EVANS & SUTHERLAND COMPUTER CORP

580 Arapeen Dr
Salt Lake City, UT 84108
801-582-5847
Contact: James F Callan
■ Products & Services
Interactive terminals

Branch Sales Offices:

- CA Westlake Vil
Evans & Sutherland Computer Corp
2659 Townsgate Rd
213-991-8880
- CA Mill Valley
Evans & Sutherland Computer Corp
655 Redwood Hwy
415-383-6377
- IL Addison
Evans & Sutherland Computer Corp
221 E Lake St
312-941-1312
- MD Glen Burnie
Evans & Sutherland Computer Corp
300 Hospital Dr
301-760-8353
- MI Southfield
Evans & Sutherland Computer Corp
29563 Northwestern Hwy
313-353-7447
- NY Newtown
Evans & Sutherland Computer Corp
Brookwood Dr
203-426-2148
- TX Dallas
Evans & Sutherland Computer Corp
7616 LBJ Frwy
214-386-4365
- UT Salt Lake City
Evans & Sutherland Computer Corp
580 Arapeen Dr
801-582-5847
- WA Bellevue
Evans & Sutherland Computer Corp
301 116th Ave
206-454-9682
- GERMANY, WEST**
Nordenstadt
Evans & Sutherland Computer Corp
Mecklenburger Str 42 6200
Wiesbaden
011-49 6122 4659

EX-CELL-O REMEX DIV

PO Box C-19533
Irvine, CA 92713
714-957-0039
Advertising page 103
Contact: Fred H Vidro
■ Products & Services
Disc drives, floppy
Tape, paper
Tape punch/reader, paper

Branch Sales Offices:

- CO Englewood
Data Systems Mktg
14 Iverness Dr
303-770-1972
- FL Orlando
Gentry Assoc
550 N Bumby
305-894-4401
- GA Irvine
Ex-Cello-O Remex Div
1733 Alton St
714-557-6860

IL Rolling Meadows
S E A
1225 Carnegie St
312-255-4820

MA Southboro
Victor Assoc
304 Turnpike Rd
617-481-4010

MI Milford
Milford Scientific
Box 264
313-685-8912

NY Ridgewood NJ
Hansen Assoc
Box 806
201-652-7055

OH Dayton
Boco
333 W First St
513-224-0220

TX Houston
Data Marketing Assoc
3330 Bering Dr
713-780-2511

WA Seattle
Rush Drake
6133 Sieta Av S
206-763-2755

ENGLAND
Brentwood Middlesex
X-Data
24 Windmill Rd
01568-2088

GERMANY, WEST
Frankfurt
Noro-Micro
Victor-Slotosch Strasse 20
06194-3911

ITALY
Torino
Microtecnic
Casella Postale 210/Ferr

EXIDE ELECTRONICS CORP
2 Penn Center Plaza
Philadelphia, PA 19102
215-422-4000
Contact: Rick Brotherton
■ Products & Services
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

CA Burlingame
Western Dist
851 Burlway Rd
415-348-4287

GA College Park
Southeast Dist
1568 Willingham Dr
404-768-4022

NJ Madison
Northeast Dist
33 Kings Rd
201-377-8594

NC Raleigh
Mid Atlantic Dist
3301 Spring Forest Rd
919-872-3020

PA Philadelphia
Mid-Eastern Dist
2 Penn Center Plaza
215-422-4094

TX Dallas
Southwest/Mountain States Dist
14001 Goldmark
214-690-4567

EXPANDOR INC
400 St Claire Plaza
Pittsburgh, PA 15241
412-746-2910

Advertising page 144

Contact: R C Raub

■ Products & Services

Line sharing units
Modem sharing units
Port sharing units
Acoustic couplers
Line drivers
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)

Modem eliminators
EIA cable testers
Electrical-parameters test equipment
RTS emulator
Automatic answering units
Cables, electrical prefabricated extending
Code converters
Computer/communications interfaces
Data jacks and plugs
Protocol converters
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, manual

EXTEL CORP.

3005 MacArthur Blvd
Northbrook, IL 60062
312-291-2550

Contact: Joe M Ciano

■ Products & Services

Tape punch/reader, paper
Programmable terminals
Remote line printers
Remote job entry terminals
Teletypewriters
Lease and resale organizations

Branch Sales Offices:

CA Los Angeles
Extel Corp
514 Shatto Pl
213-383-1101

GA Atlanta
Extel Corp
41 Marietta St NW
404-577-3848

MA Boston
Extel Corp
100 Summer St
617-482-1750

NY New York
Extel Corp
One World Trade Ctr
212-432-9180

TX The Woodlands
Extel Corp
2202 Timberlock Pl
713-367-7931

ONTARIO, CANADA

Markham
Extel Communications (Canada)
Ltd
113 Telson Av
416-495-1693

ENGLAND

Slough Berkshire
Transtel Communications Ltd
Mill St
44-753-26955

HONG KONG

Hong Kong
Extel Corp Far East Liaison
Office
4/F Connaught Rd
5-28311385

FABRI-TEK INC

6900 Shady Oak Road
Eden Prairie, MN 55344
612-941-9100

Contact: Orval Larson

■ Products & Services

Add-on main memory

Branch Sales Offices:

CA Melbourne
Fabri-Tek
305-777-1133

CA Los Angeles
Fabri-Tek
213-888-9916

IL Chicago
Fabri-Tek
312-843-2929

MN Minneapolis
Fabri-Tek
612-941-9100

FACIT INC

66 Field Point Rd
Greenwich, CT 06830
203-622-9150

Contact: Odd Bjerkmann

■ Products & Services

Cassette drives
Tape, paper
Tape punch/reader, paper
Teletypewriters, impact
Video data terminals (KSR)

Branch Sales Offices:

CA Gardena
Facit Inc
540 W Patrice Pl
213-515-4747

CA Foster City
Facit Inc
1167 Chess Dr
415-574-8225

CT Greenwich
Facit Inc
66 Field Point Rd
203-622-9150

IL Elmhurst
Facit Inc
770 N Church Rd
312-834-8100

NJ Secaucus
Facit Inc
501 Winsor Dr
201-866-5111

FAIRCHILD SPACE & ELECTRONICS
COMPANY

20301 Century Blvd
Germantown, MD 20767
301-428-6568

Contact: S J Brite

■ Products & Services

Earth stations
Data security devices, encoder/decoders
Satellite delay compensation units

FARADAY INC

805 S Maumee St
Tecumseh, MI 49286
517-423-2111

Contact: A B Thomas

■ Products & Services

Fire detection/protection equipment

FARINON ELECTRIC

1691 Bayport Ave
San Carlos, CA 94070
415-592-4120
Contact: James Strickland
■ Products & Services
Multiplexers, frequency division
Multiplexers, time division
Earth stations
Lightwave (fiber optic) systems
Microwave/laser systems

Branch Sales Offices:

KS Overland Park
Farinon Electric
Box 4738
913-648-1158

NJ Bridgewater
Farinon Electric
Box 6802
201-469-6740

TX Houston
Farinon Electric
720 N Post Oak Rd
713-688-5560

QUEBEC, CANADA

Dorval
Farinon Canada
657 Orly Av
518-561-2640

AUSTRIA

Wein
Farinon GmbH
Diester Weggasse 29
85-95-04

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

FASFAX

PO Box H; Simon & Ledge Sts
Nashua, NH 03061
603-889-5152
Contact: John Hasychak

FENWAL INC

400 Main St
Ashland, MA 01721
617-881-2000
Contact: T C Jewell
■ Products & Services
Fire detection/protection equipment

Branch Sales Offices:

CA Burlingame
Fenwal Inc
839 Mitten Rd
415-692-1080

GA Atlanta
Fenwal Inc
4700 Chamblee-Dunwoody Rd
404-457-7128

NJ Andover
Fenwal Inc
486 Sleepy Hollow Rd
201-786-5869

TX Houston
Fenwal Inc
4715 Strack Rd
713-440-7426

WI Marinette
Fenwal Inc
Stephenson Bank Bldg
715-732-0011

**FERNSEH INC BELL & HOWELL
FERNSEH DISPLAY DEVICES**

3485 W 2100 S
Salt Lake City, UT 84119
801-972-8000
Contact: Richard Sager
■ Products & Services
Data content monitors
Tape punch/reader, paper
Graphic display terminals

Branch Sales Offices:

CA Palo Alto
Bell & Howell Fernseh Display
Devices
2465 E Bayshore
415-858-2181

CA Newport Beach
Bell & Howell Fernseh Display
Devices
4000 Birch St
714-752-7602

MD Baltimore
Burgin-Kreh Associates
6100 Baltimore National Pike
301-788-5200

UT Salt Lake City
Bell & Howell Fernseh Display
Devices
3485 W 2100 S
801-972-8000

FINANCIAL NETWORK ARCHITECTS

3366 N Torrey Pines Ct
La Jolla, CA 92037
714-455-7086

FIRE-LITE ALARMS INC

40 Albert St
New Haven, CT 06504
203-777-7861
Contact: Keith C G Kyle
■ Products & Services
Fire detection/protection equipment

Branch Sales Offices:

CA Commerce
Fire-Lite Alarm
3333 S Malt Ave
213-726-3161

FIRST COMPUTER CORP

825 North Cass
Westmont, IL 60559
312-920-1050
Contact: Don Berteau
■ Products & Services
Minicomputers
DDP systems
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Graphic display terminals
Teleprinters, impact
Video data terminals (KSR)

FLORIDA DATA CORP

3308 New Haven Ave W
Melbourne, FL 32901
305-724-6088
■ Products & Services
Digital plotters
Remote line printers
Teleprinters, impact
Branch Sales Offices:
CA Norwalk
Florida Data Corp
11859 Spry St
213-929-1646

NH Salem
Florida Data Corp
Box 798
603-893-8200

NJ Medford
Florida Data Corp
Box 381
602-268-0600

**FORD AEROSPACE AND
COMMUNICATIONS CORP
WESTERN DEVELOPMENT LAB DIV**

3939 Fabian Way, Bldg 25
Palo Alto, CA 94303
415-494-7400
Contact: J C Salute
■ Products & Services
Concentrators
Front-end processors
Packet processors
Earth stations
Lightwave (fiber optic) systems
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Network management centers
Technical control centers
DDP systems
Local network systems
Batch terminals
Data entry terminals
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Teleprinters, impact
Terminal controllers
Terminal interfaces
Automatic answering units
Automatic calling units
Code converters
Computer/communications interfaces
Data access arrangement devices
Data compression devices
Data security devices, encoder/decoders
Data security devices, personal
identification systems
Data security devices, software security
modules
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations
Network simulation services

Branch Sales Offices:

DC Washington
Ford Aerospace & Comm Corp
815 Connecticut Ave NW
202-785-6083

MI Detroit
Ford Aerospace & Comm Corp
300 Renaissance Center
313-568-7708

FORMATION INC

823 E Gate Dr
Mt Laurel, NJ 08054
609-234-5020
Contact: Dale Sutton
■ Products & Services
Front-end processors
Minicomputers
DDP systems
Add-on main memory
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

IL Elk Grove Village
Formation Inc
1838 Elmhurst Rd
312-364-6070

MD Rockville
Formation Inc
416 Hungerford Dr
301-424-1424

NJ Woodbridge
Formation Inc
485 US Highway 1
201-636-6330

NJ Mt Laurel
Formation Inc
133 Gaither Dr
609-778-8200

4-DEGREE CONSULTING

4736 Oxford Rd
Macon, GA 31210
912-477-0293
Contact: Gilbert Held
■ Products & Services
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Educational services

FOUR-PHASE SYSTEMS INC

10700 N De Anza Blvd
Cupertino, CA 95014
408-255-0900
Contact: Claudia Heyman
■ Products & Services
DDP systems
Local network systems
Badge readers
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)
Word processors, communicating
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA El Segundo
Four-Phase Systems Inc
101 Continental Blvd
213-640-1438

CA Newport Beach
Four-Phase Systems Inc
4350 Von Karman
714-752-6656

CA San Bruno
Four-Phase Systems Inc
1150 Bayhill Dr
415-873-9073

CA Sacramento
Four-Phase Systems Inc
800 Howe Ave
916-929-6987

CO Englewood
Four-Phase Systems Inc
Greenwood Plaza S; 5680 S
Syracuse Cir
303-770-7600

CT Avon
Four-Phase Systems Inc
20 Tower Ln; Avon Park S
203-678-0440

CT Stamford
Four-Phase Systems Inc
#5 Landmark Sq
203-357-1860

DC Washington
Four-Phase Systems Inc
1850 'K' St NW
202-785-9222

FL Miami
Four-Phase Systems Inc
8375 NW 53 St
305-591-2374

GA Atlanta
Four-Phase Systems Inc
1888 Emery St NW
404-351-0070

IL Des Plaines
Four-Phase Systems Inc
1111 E Touhy Ave
312-298-9790

IL Chicago
Four-Phase Systems Inc
150 N Wacker Dr
312-558-9550

IN Indianapolis
Four-Phase Systems Inc
6321 La Pas Trail
317-298-9616

KS Overland Park
Four-Phase Systems Inc
9393 W 110 St
913-383-2750

MA Lexington
Four-Phase Systems Inc
33 Hayden Ave
617-861-9235

MI Birmingham
Four-Phase Systems Inc
30700 S Telegraph Rd
313-973-9550

MN Minneapolis
Four-Phase Systems Inc
3001 Metro Dr
612-854-4461

MO St Louis
Four-Phase Systems Inc
11500 Olive Blvd
314-569-2052

NJ Mount Laurel
Four-Phase Systems Inc
303 Fellowship Rd
609-234-0200

NJ Rochelle Park
Four-Phase Systems Inc
Mack Center 1; 365 W Passaic St
201-845-0252

NY New York
Four-Phase Systems Inc
1211 Ave of the Americas; Ninth
Fl
212-575-5656

NY New York
Four-Phase Systems Inc
61 Broadway; 21st Fl
212-480-8440

NY Syracuse
Four-Phase Systems Inc
The 500 Bldg; 500 S Salina St
315-422-4432

OH Cincinnati
Four-Phase Systems Inc
130 Tri County Pkwy
513-772-3220

OH Cleveland
Four-Phase Systems Inc
5755 Granger Rd
216-661-0720

PA Rio Piedras
Four-Phase Systems Inc
Ave Munoz Rivera 1129

TX Dallas
Four-Phase Systems Inc
2735 Villa Creek Dr
214-243-1173

TX Houston
Four-Phase Systems Inc
5373 W Alabama
713-961-4601

WA Kirkland
Four-Phase Systems Inc
10604 NE 38 Pl
206-827-9751

WI Wauwatosa
Four-Phase Systems Inc
2433 N. Mayfair Rd
414-476-5123

FRANKLIN ELECTRIC PROGRAMMED POWER DIV

995 Benicia Ave
Sunnyvale, CA 94086
408-245-8900
Contact: L F Hovey
■ Products & Services
Electrical-parameters test equipment
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AZ Tempe
Trembly Assoc
Box 27468
602-967-2058

CA Hayward
Advanced Technology Inc
26120 Eden Landing Rd
415-785-8346

CA Van Nuys
Gordon-Elliott Inc
13615 Victory Blvd
213-873-6862

CO Englewood
Data Specialties Inc
3602 S Jason
303-761-5763

IL Arlington Heights
Dy Tec Central
315 W University Dr
312-394-3380

IN Indianapolis
Dy Tec Central
25 Beachway Dr
317-247-1316

IA Iowa City
Dytec/Iowa
Box 2148
319-683-2282

KS Lenexa
Engineered Equipment Co Inc
No 41 Lenexa Business
Center; 9900 Pflumm Rd
913-492-9221

MD Columbia
Tri-Tech Eng
9130 Red Branch Rd
301-995-0060

MA Holbrook
McLellan Assoc
63 Cedar Hill Rd
617-767-4771

MN St Paul
Dytec/North Inc
1821 University Ave #163-N
612-645-5816

MO St Louis
Conner Universal
8216 Brentwood Dr
314-644-4640

NM Albuquerque
Trembly Assoc
119 Quincy NE
505-266-8616

NY DeWitt
dB Assoc
3307 Erie Blvd E
315-446-0220

NY Great Neck
Measurement Technology Inc
159 Northern Blvd
212-895-7177

OH Cleveland
Lax Assoc/North
18615 Detroit Ave
216-226-8815

OH Cincinnati
Lax Assoc/South
230 Northland Blvd
513-771-4411

OK Oklahoma City
Computer Power of Oklahoma
4307 N Walnut
405-521-1163

OK Tulsa
Computer Power of Oklahoma
5462 S 94 E Ave
918-664-7874

PA Pittsburgh
Lax Assoc/East
Box 12613
412-833-5477

TX Dallas
Data Aids
2880 LBJ Freeway
214-620-1551

TX Houston
Data Aids
1440 N Loop
713-862-6685

WA Seattle
Escher Assoc
3109 NE 192 St
206-363-1193

WI Milwaukee
The Christofferson Co Inc
6727 N Industrial Rd
414-353-0517

**FRANKLIN SYSTEMS CORP
A DIV OF INT'L COMM SCIENCES
INC**

733 Lakefield Rd
Westlake Village, CA 91361
213-991-6050
Contact: Gary Calthrap
■ Products & Services
Concentrators
Message switchers
Minicomputers
Remote network processors

Branch Sales Offices:

CA Orinda
Franklin Systems Corp
115 Orinda Way
415-254-1744

CA Chatsworth
Intl Comm Sciences Inc
9000 Mason Ave
213-998-1300

NY New York
Intl Comm Sciences Inc
50 Broad St
212-344-4180

FREDERICK ELECTRONICS CORP
PO Box 502
Frederick, MD 21701
301-662-5901
Contact: Ramon C Curry

■ Products & Services
Multiplexers, frequency division
Multiplexers, time division
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Error rate detectors
Code converters
Error controllers
Switches, data communications, automatic

Branch Sales Offices:

MD Bethesda
Warner Associates Inc
9911 Carter Rd
301-469-8904

ARGENTINA
Buenos Aires
Plantronics Inc
Carlos Pellegrini 739, 3 Piso
392-7837/7920/8010

ENGLAND
Ferndown, Wimborne
Intertec Ltd
55 Cobham Rd
0202-893838

MEXICO
Tijuana
Plamex SA
Centro Industrial Barranquita,
19
6-5907

Get new product information when it
breaks?
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FTC COMMUNICATIONS INC
25 Broad St
New York, NY 10004
212-747-5670
Contact: L J Gatti
■ Products & Services
International record carriers

GALILEO ELECTRO-OPTICS CORP
Galileo Park
Sturbridge, MA 01518
617-347-9191
Contact: Kim Carpenter
■ Products & Services
Lightwave (fiber optic) systems
Cables, lightwave (optical fiber)
Power supplies

Branch Sales Offices:

CA Alamo
Industrial Measurement & Control
205 Austin La
415-568-2000

CA Long Beach
Saber Enterprises Inc
901 E 27th St
213-595-5646

GA Atlanta
Beacon Electronic Associates
2285 Peachtree Rd NE
404-351-3654

MA Needham Heights
Sturgeon Co
687 Highland Ave
617-444-6603

MA Planville
Teknis Inc
617-695-3591

MI Brighton
SAI Marketing Corp
9880 E Grand River Ave
313-227-1786

MN Minnetonka
Clark R Gibb Co
11100 Bren Rd W
612-932-3950

MO St Louis
Ensco-Rep Inc
11714 Lackland Industrial Dr
314-567-3935

NJ Tenafly
Budd-Tronics Inc
256 Engle St
201-569-2230

NM Albuquerque
Cleveland Enterprises Inc
124 Jackson St NE
505-266-5594

NY East Syracuse
Fountain, Young & Co
6806 Newbrook Ave
315-437-7733

TX Richardson
R S Marston Co
1111 Floyd Rd
214-235-3577

WA Seattle
ES/Chase Co
5950 6th Ave S
206-762-4824

ONTARIO, CANADA
Toronto
Datacomp Electronics Ltd
2 Silver Ave
416-533-2381

GAMMA TECHNOLOGY INC
2452 Embarcadero Way
Palo Alto, CA 94303
415-856-7421
Contact: Michael W Whitehead
■ Products & Services
Minicomputers
Packet processors
Remote network processors
DDP systems
Interactive terminals
Remote job entry terminals
Data security devices, software security
modules
Protocol converters
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

Branch Sales Offices:

AUSTRALIA
Perth
Computer Protocol Ltd
3162 Mill Point Rd
(09) 367-1388

NETHERLANDS
Pumerend
SDT Data Technology BV
Waterland Efficiency
Groep;Gorslaan 10

SOUTH AFRICA
Pretoria
Perseus Computing Automation
Box 3986
47-1161

SPAIN
Madrid
Hispano Electronica Information
sa
Aportado de Correos 48

SWEDEN

Stockholm
AU System AB
Skeppargatan 48
08-6304-05

SWITZERLAND

Newmarkt
Interautomation AG
CH-5200 Brugg Postfach 365
056-41-94-00

GANDALF DATA INC

1019 S Noel Ave
Wheeling, IL 60090
312-541-6060
Advertising page 70
Contact: L M Kitilson
■ Products & Services
Concentrators
Front-end processors
Message switchers
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Packet processors
Port selectors
Port sharing units
Lightwave (fiber optic) systems
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Modem eliminators
Error rate detectors
Switches, data communications, automatic

Branch Sales Offices:

AZ Phoenix
Zeus inc
546 East Portland
602-253-6101
CA Poway
Gandalf Data Inc W
13035 Action Ave
714-748-0358
CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244
FL Orlando
FM Associates Ltd
5018 Mortier Ave
305-851-5710
HI Honolulu
Data Management
677 Ala Moana Blvd
808-531-5136
MD Silver Springs
Gandalf Data Inc E
1113 Dryden St
301-593-0798
MA Wakefield
IMF Sales Associates
18 Lakeside Office Pk
617-245-8900
MN Edina
Rae Associates
6415 Limerick Dr
612-941-2693

MO

Hazelwood
Dytec South
320 Brooks Dr
314-731-5400

MO

Silver Springs
Terminal Networks
118 Elrid Dr
301-622-3535

MO

Chesapeake City
Peripheral Sales
Box 36
301-885-5718

NJ

Englewood
Tecnimat Inc
500 Grand Ave
201-569-4200

NY

E Syracuse
Ossmann Instruments
6666 Old Collamer Rd
315-437-6666

OH

Rocky River
ARC Associates
21330 Center Ridge
216-333-8375

TX

Richardson
Data Applications
1300 E Arapaho
214-231-4846

WA

Bellevue
Pacific Northwest Electronics
14264 Eastgate Way
206-641-6444

ONTARIO, CANADA

Ottawa
Gandalf Data Com
9 Slack Road
613-225-0565

GATES ACOUSTINET INC

PO Box PP
Santa Rosa, CA 95403
707-584-7360
Contact: Wendell Harris
■ Products & Services
Furniture, cabinets, terminal enclosures

GATES ENERGY PRODUCTS INC

1050 S Broadway
Denver, CO 80217
303-744-4806
Contact: W J Barcus
■ Products & Services
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AZ Scottsdale
DAR-C Inc
14425 N Scottsdale
602-948-2240
CA San Jose
Milton Reynolds
6219 W Walbrook Dr
408-252-7320
FL Pompano Beach
V G Sales Co Inc
2500 NW 16th Ln
305-971-0900
IL Arlington Heights
James N Bailey
902 N Evergreen
312-398-5590
IN Greenfield
France Enterprises Inc
4013 Walnut Ct
317-326-3165
MD Towson
William B MacLea
5 Lombardy Pl
301-321-0852

MA

Maynard
Robert W Ojalehto
2 Walker St
617-897-6991

MN

Minneapolis
HMR Inc
7200 France Av S
612-831-7400

NJ

Somerville
Daniel H Pantiel
525 Brookside La
201-359-2019

OR

Portland
C K Shanks & Assoc Inc
Box 25385
503-292-5656

TX

Richardson
R F Kimball Co Inc
777 S Central Expy
214-231-3447

TX

Houston
R F Kimball Co Inc
3233 Wesleyan
714-840-0590

WA

Seattle
C K Shanks & Assoc
4000 Aurora Ave N
206-632-4290

BRITISH COLUMBIA, CANADA

Vancouver
Canadian Dynamics Nova Ltd
8264 St George St
604-324-3116

ONTARIO, CANADA

Mississauga
Munro Electronic Components Ltd
7171 Torbram Rd C9
416-676-1042

ENGLAND

Cranleigh Surrey
Chloride-Gates Energy Ltd
Little Mead Ind Estate
011-44-04866-71181

GDS INC

1911 22 Ave S
Seattle, WA 98144
322-9330
Contact: Jerry Solomon
■ Products & Services
Minicomputers
Remote network processors
EIA cable testers
DDP systems
Disc drives, floppy
Programmable terminals
Interactive terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Data communications software,
communications processors vendors
Data communications software, intelligent
terminal vendors

GEN/COMP INC.

6 Algonquin Rd.
Canton, MA 02021
617-828-2008
Contact: Gerald E Nutter
■ Products & Services
Terminal controllers
Terminal interfaces
Cables, electrical prefabricated extending
Computer/communications interfaces
Protocol converters

GENERAL AUTOMATION

1055 S East St
Anaheim, CA 92805
714-778-4800
Contact: Stephen McKenzie
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, time division
DDP systems
Local network systems
Cassette drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Badge readers
Batch terminals
Digital plotters
Programmable terminals
Interactive terminals
Remote job entry terminals
Teleprinters, impact
Terminal controllers
Cables, electrical prefabricated extending
Computer/communications interfaces
Data security devices, personal
identification systems
Furniture, cabinets, terminal enclosures
Power supplies
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Educational services
Maintenance organizations
Used equipment

Branch Sales Offices:

AZ Scottsdale
General Automation
6900 E Camelback Rd
602-941-2749
CA San Francisco
General Automation
425 Battery St
415-398-2361
CA Sunnyvale
General Automation
306 Potrero Ave
408-245-6500
CA Santa Ana
General Automation
1900 E 4 St
714-972-8383
GA Atlanta
General Automation
2111 Powers Ferry Rd
404-955-8860
IL Bensenville
California GA Corp
1260 Mark St
312-860-4800
IN Indianapolis
General Automation
2346 S Lynhurst
317-248-0377
MD Hanover
General Automation
7225 Parkway Dr
301-796-7900
MI Farmington Hills
General Automation
24320 Indoplex Circle
313-478-2640

MI Grand Rapids
General Automation
2120 44 St SE
616-455-2000
MN Minneapolis
General Automation
7851 Metro Pkwy
612-854-0440
NJ Hasbrouck Heights
General Automation
377 Route 17
201-288-6560
NY New York
General Automation
One Penn Plaza
212-736-3737
NY Rochester
General Automation
1411 Chile Ave
716-436-8030
OH Cincinnati
General Automation
4055 Executive Park Dr
513-563-0860
OH Rocky River
General Automation
20525 Center Ridge Rd
216-333-3544
PA Pittsburgh
General Automation
875 Greentree Rd
412-921-3100
TX Dallas
General Automation
4300 Alpha Rd
214-661-5370
TX Houston
General Automation
8554 Katy Frwy
713-464-2815
WI West Allis
General Automation
10201 West Lincoln Ave
414-321-1020

**GENERAL CABLE COMPANY
A DIV OF GK TECHNOLOGIES INC**

500 W Putnam Ave
Greenwich, CT 06830
203-661-0100
Contact: John Cavanaugh
■ Products & Services
Lightwave (fiber optic) systems
Cables, electrical prefabricated extending
Cables, lightwave (optical fiber)

Branch Sales Offices:

AL Huntsville
General Cable Co
4645 Commercial Dr NW
205-837-2561
CA Pomona
General Cable Co
2480 Ficus St
714-591-4802
CO Denver
General Cable Co
7100 Broadway
303-428-8000
FL Tampa
General Cable Co
2902 East Sligh Av
813-236-5575
HI Honolulu
General Cable Co
1035 Kikowaena Pl
808-839-0361

For further catalog information, turn to
UpDate Service Card, page 201.

IL Des Plaines
General Cable Co
1701 Birchwood Av
312-297-1711
IN Indianapolis
General Cable Co
3003 E 96 St
317-844-4311
KS Mission
General Cable Co
Box 1063
913-677-5252
NE Lincoln
General Cable Co
5625 "O" St
402-489-9371
NJ Woodbridge
General Cable Co
Box 700
201-636-5500
NY Scotia
General Cable Co
153 Willow La
518-399-7335
PA Erie
General Cable Co
2431 W Grandview Blvd
814-838-6536
PA Broomall
General Cable Co
600 Reed Rd
215-353-5455
TX Dallas
General Cable Co
Box 344040
214-620-0986
VA Richmond
General Cable Co
3113 W Marshall St
804-353-9970
WA Everett
General Cable Co
12414 Highway 99
206-353-5577
WI Cupertino
General Cable Co
20421 Stevens Creek Blvd
408-255-4082

GENERAL DATACOMM IND INC

1 Kennedy Ave
Danbury, CT 06810
203-797-0711
Advertising page 63
Contact: Joseph Scarpa
■ Products & Services
Concentrators
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Multiplexers, group band
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Network management centers
Technical control centers
Data access arrangement devices

Branch Sales Offices:

CA North Ridge
General Datacomm Industries Inc
8910 Quartz St
213-998-3737

CA San Jose
General Datacomm Industries Inc
1798 Technology Dr
408-998-2336

CA Santa Ana
General Datacomm Industries Inc
3609 W MacArthur Blvd
714-957-0244

GA Atlanta
General Datacomm Industries Inc
6520 Powers Ferry Rd
404-955-0682

IL Des Plaines
General Datacomm Industries Inc
3150 Des Plaines Ave
312-298-4181

NJ Ridgewood
General Datacomm Industries Inc
615 Franklin Tpke
201-445-5626

TX Houston
General Datacomm Industries Inc
2630 Fountainview
713-780-1480

TX Dallas
General Datacomm Ind Inc
7616 LBJ Frwy
214-980-0803

**GENERAL ELECTRIC CO —
COMMUNICATION EQUIPMENT
LEASING AND SERVICE**

1 River Rd; Bldg 5-Room 210
Schenectady, NY 12345
518-385-0157

Advertising pages 152-153

Contact: Manny Freitas

■ Products & Services

Concentrators

Multiplexers, statistical (intelligent)

Acoustic couplers

Line drivers

Modems, limited distance

Modems, voice-grade, low-speed

(0-1,200 b/s)

Modems, voice-grade, medium speed

(1,800-3,600 b/s)

Modems, voice-grade, high-speed

(4,800-9,600 b/s)

DDP systems

Programmable terminals

Interactive terminals

Portable data entry terminals

Remote line printers

Teleprinters

Teleprinters, impact

Teleprinters, non-impact

Video data terminals (KSR)

Video data terminals (RO)

Data access arrangement devices

Paper for terminals

Ribbons and supplies for terminals and

printers

Lease and resale organizations

Maintenance organizations

**GENERAL ELECTRIC CO
DATA COMM PROD DEPT**

GE Drive
Waynesboro, VA 22980
703-942-8161

Advertising page 125

Contact: J E Walsh

■ Products & Services

Remote network processors

Cassette drives

Disc drives, floppy

Tape, magnetic

Tape drives, magnetic

Tape punch/reader, paper

Batch terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teletypewriters
Word processors, communicating

Branch Sales Offices:

CA Sacramento
General Electric Co; Data Comm
Div
2160 Royale Rd
916-927-3638

CA El Monte
General Electric Co; Data Comm
Div
9350 E Flair Dr
213-572-5310

CA San Diego
General Electric Co; Data Comm
Div
2560 First Av
714-236-1266

CA San Leandro
General Electric Co; Data Comm
Div
2955 Merced St
415-436-9585

CO Denver
General Electric Co; Data Comm
Div
201 University Blvd
303-320-3023

CT Meriden
General Electric Co; Data Comm
Div
1 Prestige Dr
203-238-6800

FL Tampa
General Electric Co; Data Comm
Div
2106 South Lois Av
813-877-8311

GA Atlanta
General Electric Co; Data Comm
Div
270 Carpenter Dr NE
404-256-1966

IL Oak Brook
General Electric Co; Data Comm
Div
814 Commerce
312-986-3535

MD Rockville
General Electric Co; Data Comm
Div
301-770-4434

MA Wilmington
General Electric Co; Data Comm
Div
50 Fordham Rd
617-657-4800

MI Southfield
General Electric Co; Data Comm
Div
22255 Greenfield Rd
313-552-3061

MN Edina
General Electric Co; Data Comm
Div
7450 Metro Blvd
612-830-8260

MO St Louis
General Electric Co; Data Comm
Div
1970 Congressional Dr
314-423-8800

NJ Totowa
General Electric Co; Data Comm
Div
409 Minnisink Rd
201-256-4100

NJ Cherry Hill
General Electric Co; Data Comm
Div
1790 E Marlon Pike
215-241-5491

NY Syracuse
General Electric Co; Data Comm
Div
Electronics Pk
315-456-3319

NY New York
General Electric Company
International Sales Div; 570
Lexington Av
212-750-2000

OH Cincinnati
General Electric Co; Data Comm
Div
2621 Victory Pkwy
513-559-3597

OH Cleveland
General Electric Co; Data Comm
Div
1000 Lakeside Av
216-523-6262

PA Pittsburgh
General Electric Co; Data Comm
Div
300 Sixth Av Bldg
412-566-4116

TX Dallas
General Electric Co; Data Comm
Div
6350 LBJ Frwy
214-661-5137

TX Houston
General Electric Co; Data Comm
Div
4444 FM 1960 W
713-440-3580

WA Seattle
General Electric Co; Data Comm
Div
112 Andover Park E
206-575-2810

ALBERTA, CANADA
Calgary
Canadian General Electric Co Ltd
500-4th Ave SW
403-266-1553

BRITISH COLUMBIA, CANADA
Vancouver
Canadian General Electric Co Ltd
1177 W Hastings St
604-681-8136

ONTARIO, CANADA
Rexdale
Canadian General Electric Co Ltd
396 Attwell Dr
416-675-7500

QUEBEC, CANADA
Montreal
Canadian General Electric Co Ltd
2001 University Av
514-849-9491

AUSTRALIA
Ultimo NSW
Australian General Electric Ltd
86-90 Bay St
212-3711

ENGLAND

London
International General Electric
Company of New York Ltd
Park Lorne, 111 Park Rd
01-402-4100

FRANCE

Paris
General Electric Technical
Service Co
42 Avenue Montaigne
225-52-32

GERMANY, WEST

Frankfurt
General Electric Germany
Eschersheimer Landstrasse 60/62
0611-15641

ITALY

Milan
Compagnia Generale DiElettricit 
Via Pergolesi 25
20-46-641

JAPAN

Tokyo
General Electric Japan Ltd
Tonichi Bldg; 6-2-31 Roppongi
Minato-ku
405-2920

SWEDEN

Solna
International General Electric
AB
Tritonvagen 27; Fack 17120
73-00-740

GENERAL ELECTRIC INFORMATION
SERVICES COMPANY

401 N Washington St
Rockville, MD 20850
301-340-4000

Contact: L B Ramer

■ Products & Services

Timesharing/service bureaus

Branch Sales Offices:

AL Birmingham
GE Information Services
2 Metroplex Dr
AK Anchorage
GE Information Services
517 W Northern Lights Blvd
AZ Phoenix
GE Information Services
3225 N Central Ave
CA San Francisco
GE Information Services
Two Embarcadero Ctr
CA Newport Beach
GE Information Services
4590 MacArthur Blvd
CA Los Angeles
GE Information Services
3550 Wilshire Blvd
CA Palo Alto
GE Information Services
1120 San Antonio Rd
CO Denver
GE Information Services
650 S Cherry St
CT Hartford
GE Information Services
111 Founders Plaza
CT Stamford
GE Information Services
2777 Summer St
DC Washington
GE Information Services
1050 17 St NW
FL Miami
GE Information Services
One Biscayne Twr

FL Tampa
GE Information Services
5401 W Kennedy Blvd
GA Atlanta
GE Information Services
2200 Century Pkwy NE
IL Oak Brook
GE Information Services
2803 Butterfield Rd
IL Chicago
GE Information Services
233 S Wacker Dr
IL Oak Brook
GE Information Services
2122 York Rd
IN Indianapolis
GE Information Services
8000 Knue Rd
KY Louisville
GE Information Services
2100 Gardiner Ln
LA New Orleans
GE Information Services
One Shell Sq
MD Baltimore
GE Information Services
36 S Charles St
MD Rockville
GE Information Services Co
401 N Washington St
MA Boston
GE Information Services
1 Federal St
MA Pittsfield
GE Information Services
1 Plastics Ave
MA Burlington
GE Information Services
1 New England Exec Park
MI Grand Rapids
GE Information Services
2910 Lucerne Dr
MI Dearborn
GE Information Services
1 Parklane Blvd
MN Minneapolis
GE Information Services
1500 Lilac Dr S
MO St Louis
GE Information Services
1015 Locust St
MO Kansas City
GE Information Services
911 Maine St
NE Omaha
GE Information Services
1730 1 Nat'l Cntr
NJ E Orange
GE Information Services
33 Evergreen Pl
NY New York
GE Information Services
1221 Ave of Americas
NY Rochester
GE Information Services
1 Lincoln St
NY Schenectady
GE Information Services
650 Franklin St
NY Huntington
GE Information Services
1 Huntington Quad
NY Buffalo
GE Information Services
5500 Main St

NC Charlotte
GE Information Services
301 S McDowell
NC Greensboro
GE Information Services
Northline Av Forum VI
OH Cleveland
GE Information Services
1000 Lakeside Ave
OH Columbus
GE Information Services
100 Broad St
OK Oklahoma
GE Information Services
6801 N Broadway
OK Tulsa
GE Information Services
1900 4 Nat'l Bank Bldg
OR Portland
GE Information Services
121 SW Salmon St
PA Erie
GE Information Services
2901 E Lake Rd
PA Pittsburgh
GE Information Services
300 Sixth Ave
PA Philadelphia
GE Information Services
6919 Elmwood Ave
TN Nashville
GE Information Services
3200 West End Ave
TN Nashville
GE Information Services
1101 Kermet Dr
TX Dallas
GE Information Services
1341 N Mockingbird
TX Houston
GE Information Services
601 Jefferson
WA Seattle
GE Information Services
900 4th Ave
WI Milwaukee
GE Information Services
615 E Michigan St
PUERTO RICO
Hato Rey
GE Information Services
Banco De Ponce Bldg
PUERTO RICO
Hato Rey
GE Technical Services Co
868 Munoz Rivera Ave
ONTARIO, CANADA
Toronto ON
Canadian GE Co Ltd Information
Services
1420 Dupont St
AUSTRALIA
Milsoms Point
GE Information Services Pty Ltd
61 Lavender St
AUSTRIA
A-1150 Wien
GE Informations-Services Ges mbH
Storchengasse 1
BELGIUM
1040 Brussels
S A General Electric Information
Services NV
Avenue Des Arts 56
DENMARK
1270 Kobenhavn K
OK Data
Gronningen 17

For further catalog information, turn to
UpDate Service Card, page 201.

ENGLAND

London WC1B 5AB
GEISCO Ltd
114-118 Southampton Row

FINLAND

Opastinsilta 8 E;00520 Helsinki
52
Oy Nokia AB Elektroniikka
Time Sharing
Service;Laskentakeskus

FRANCE

92080 Paris La Defense
GE Information Services SA
Tour Atlantique;Cedex 06

GERMANY, WEST

5000 Koehn 41
GE Information Service GmbH
Luxemburger Strasse 299

ITALY

20129-Milano
GE Information Services SpA
Via Regina Gioranna 29

JAPAN

Chuo-Ku
Information Services
Int'l-Dentsu Ltd
Kosan #2 Bldg;1-7-13 Tsukiji

MEXICO

Mexico 6
Tiempo Compartido SA
Paseo de la Reforma 300 12 piso

NETHERLANDS

1014 BA Amsterdam
GE Information Services BV
Kabelweg 37

NORTHERN IRELAND

Dublin
GE Information Services Ltd
Franklin House;140-142 Pennbrooke Rd

NORWAY

Oslo 1
GE Information Services USA A/S
Roald Amundsen Gate 2;Postboks
1770 Vik

REPUBLIC OF CHINA

Hong Kong
GE Technical Services Co
20 Pedder Street 13 F

SPAIN

Madrid 20
GE Information Services USA SA
Pedro Teixeira 8

SWEDEN

S 171 54 Solna
GE Information Services USA AB
Vretnavagen 13

SWITZERLAND

8032 Zurich
GE Information Services AG
Bergstrasse 138

VENEZUELA

Caracas
GE de Venezuela
Apartido 1666-Zona Postal 101

GENERAL ELECTRIC — VIDEO DISPLAY

Electronics Park 6-206
Syracuse, NY 13221
315-456-2152
■ Products & Services
Graphic display terminals
Video data terminals (RO)

GENERAL INSTRUMENT BUSINESS SYSTEMS DIV

271 Schilling Cir
Hunt Valley, MD 21031
301-667-0700
Contact: Mike McHale

Branch Sales Offices:

CA Arcadia
General Instrument/Business
Systems Div
418-A East Live Oak Ave
213-445-8255

IL

Park Ridge
General Instrument/Business
Systems Div
1550 Northwest Hwy
312-298-0404

NY

New York
General Instrument/Business
Systems Div
1775 Broadway
212-541-5062

GENERAL OPTRONICS CORP

3005 Hadley Rd
South Plainfield, NJ 07080
201-753-6700
Contact: Peter W Hankin
■ Products & Services
Lightwave (fiber optic) systems
Infrared systems
Teleprinters, non-impact

Branch Sales Offices:

ENGLAND
Farnham Surrey GU9 7QU
United Detector Technology Inc
15 South St
858807 Utdutg

FRANCE

92380 Garches
Equipements Scientifiques SA
54 Rue du 19 Janvier
204004 F

GERMANY, WEST

D-2000 Hamburg 60
Microscan GMBH
Uberseering 31
213288 SCAN D

ITALY

20129 Milano
Farnell Italia
Via g Mameli 31
315131

SWITZERLAND

CH-8049 Zurich
Syscom AG
Ingenieurunternehmung;Limmattalstrasse 220
58577 Syscoch

GENERAL TELEPHONE COMPANY OF INDIANA INC

8001 W Jefferson Blvd
Fort Wayne, IN 46801
219-426-2580
Contact: James L Brissey

■ Products & Services
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Automatic calling units

GENERAL TELEPHONE CO OF KENTUCKY

Box 1650
Lexington, KY 40592
606-253-4000
Contact: Ralph Carr
■ Products & Services
Telephone companies
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modem eliminators
Technical control centers
Tape, magnetic
Tape, paper
Tape punch/reader, paper
Batch terminals
Programmable terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Data access arrangement devices
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Data communications consultants

Branch Sales Offices:

KY Lexington
General Telephone of Kentucky
3358 Tates Creek Rd
606-268-9111
KY Ashland
General Telephone of Kentucky
619 15 St
606-329-1333
KY Elizabethtown
General Telephone of Kentucky
Box 10
502-737-3011

GENERAL TELEPHONE CO OF THE NORTHWEST

1800 41st St
Everett, WA 98201
■ Products & Services
Telephone companies
Computerized branch exchange (CBX)
Concentrators
Line sharing units
Message switchers
Modem sharing units
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Port selectors
Channel service units
Digital service units
Line drivers
Microwave/laser systems
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)

Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)

Modems, broadband group (to 50 kb/s)

Modems, broadband, super-group
(to 230.4 kb/s)

Modem eliminators

MIL 188C adapters

EIA cable testers

Electrical-parameters test equipment

Error rate detectors

Response-time monitors

Network management centers

Technical control centers

Cartridges

Cartridge drives

Disc drives, floppy

Discs, floppy

Floppy disc recorders

Tape, magnetic

Tape drives, magnetic

Tape, paper

Tape punch/reader, paper

Audio response units

Batch terminals

Data entry terminals

Interactive terminals

Portable data entry terminals

Remote line printers

Remote job entry terminals

Teleprinters

Teleprinters, impact

Teletypewriters

Terminal controllers

Terminal interfaces

Video data terminals (KSR)

Video data terminals (RO)

Automatic answering units

Automatic calling units

Cables, lightwave (optical fiber)

Code converters

Computer/communications interfaces

Data access arrangement devices

Data compression devices

Data jacks and plugs

Error controllers

Furniture, cabinets, terminal enclosures

Paper for terminals

Power supplies

Pulse and signal regenerators

Ribbons and supplies for terminals and
printers

Selection & transfer equipment, monitor &
test switching equipment

Selection & transfer equipment, patching
equipment

Selection & transfer equipment,
reconfiguration equipment

Switches, data communications, automatic

Switches, data communications, manual

Data communications consultants

Educational services

Maintenance organizations

Branch Sales Offices:

ID Moscow
Data Consultant
912 S Washington
208-882-2511

OR Beaverton
Data Consultant
17855 NW Cornell Rd
503-645-7461

WA Bellevue
Data Consultant
2821 Northrup Way
800-562-1000

WA Kennewick
Data Consultant
6515 W Clearwater Ave
509-735-5455

GENERAL TELEPHONE CO OF WISCONSIN

PO Box 49
Sun Prairie, WI 53590
608-837-1211
Contact: Mark Wirtz
■ Products & Services
Telephone companies
Computerized branch exchange (CBX)
Modems, limited distance
Modems, multipoint
Disc drives, floppy
Tape, magnetic
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data access arrangement devices
Switches, data communications, manual

Branch Sales Offices:

WI Wausau
General Telephone Co of
Wisconsin
413 McClellan
715-847-1255
WI Plymouth
General Telephone Co of
Wisconsin
414-893-7375

GENERAL TELEPHONE DIRECTORY CO.

1865 Miner St.
Des Plaines, IL 60016
312-391-5100
Contact: William M Anderson

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

GENERAL TERMINAL CORP

14831 Franklin Ave
Tustin, CA 92681
714-730-0123
Contact: Irene Kanoshita
■ Products & Services
Data entry terminals
Programmable terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400

CA Tustin
GTC Inc
14831 Franklin Ave
714-730-0123

CA Newport Beach
GTC Inc
4020 Birch St
714-752-1938

GA Burlington
GTC Inc
2nd Ave
617-272-6660

MA Burlington
General Terminal Corp
Second Ave
617-272-6660

MA Needham
New England Data Systems
10 Kearny Rd
617-449-4480

NY E Northport
GTC Inc
73 Wintercress Ln
516-368-4005

TX Houston
GTC Inc
W Memorial Pk; 8582 Katy Frwy
713-932-1365

ONTARIO, CANADA

Markham
LANPAR Ltd
85 Torboy Rd
416-495-9123

BELGIUM

Brussels
GTC Inc
Avenue Louise 176
924-76712

ENGLAND

Sevres
GTC Inc
Rye Carle Vernet
027-7535

ENGLAND

Chertsey, Surrey
GTC Inc
5 London St
667-445

GERMANY, WEST

Munich
GTC Inc
Lindwurmstrasse 117
089-775-031

NORWAY

Kristiansand
GTC Inc
Dalanevein 18A
042-314-60

SWITZERLAND

Geneva
GTC Inc
31 Avenue Ernest Pictet
022-442-940

GENRAD

300 Baker Ave
Concord, MA 01742
617-369-4400
Contact: Sales & Services Div
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

AL Genrad
907-279-5741

CA Irvine
Genrad
17361 Armstrong Ave
714-540-9830

CA Santa Clara
Genrad
2855 Bowers Ave
408-727-4400

DC Rockville
Genrad
1701 Research Blvd
301-424-6224

FL Orlando
Genrad
988 Woodcock Rd
305-894-4303

IL Schaumburg
Genrad
1067 E State Pkwy
312-843-5599

MA Waltham
Genrad
170 Tracer Ln
617-890-4900

NY Saddle Brook
Genrad
380 Midland Ave
201-791-8990

OH Milford
Genrad
Park 50, 2002 Ford Circle
513-831-9210

TX Richardson
Genrad
1121 Rockingham Ln
214-234-3357

GILTRONIX INC
450 San Antonio Ave
Palo Alto, CA 94306
415-493-1300
Contact: Hertsel Corech
■ Products & Services
Concentrators
Message switchers
Modem sharing units
Port selectors
Port sharing units
Remote network processors
Data content monitors
Network management centers
Technical control centers
Cables, electrical prefabricated extending
Computer/communications interfaces
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Data communications software,
communications processors vendors

Branch Sales Offices:

MA Cambridge
Compumart
270 Third St
617-491-2700

QUEBEC, CANADA
Montreal
Cesco Electronics Ltd
4050 Jean Talon St W
514-735-5511

GLENAYRE ELECTRONICS INC
1551 Columbia St
Blaine, WA 98230
206-676-1980
Contact: Irene Robinson
■ Products & Services
Specialized carriers
Telephone companies
Automatic calling units
Power supplies

Branch Sales Offices:

NC Raleigh
Glenayre Electronics Inc
405-E Hensley Dr
919-847-9850

TX Bedford
Glenayre Electronics Inc
Box 217
817-267-8961

WA Kent
Glenayre Electronics Inc
Box 3279
206-824-6071

GML INFO SVS
594 Marrett Rd.
Lexington, MA 02173
617-861-0515
Contact: Patrick Kenealy
■ Products & Services
Data communications consultants
Educational services

GNAT COMPUTERS, INC.
7895 Convey Court—Bldg. 6
San Diego, CA 92111
714-560-0433
Contact: Robert E Carter
■ Products & Services
Front-end processors
DDP systems
Programmable terminals
Word processors, communicating
Computer/communications interfaces

GOODWOOD DATA SYSTEMS

150 Rosamond St
Carleton Pl, ON K7C 3P4
613-257-3610
Contact: D G Grainger
■ Products & Services
EIA cable testers
Graphic display terminals
Programmable terminals
Interactive terminals
Terminal controllers
Educational services

Branch Sales Offices:
NY Ogdensburg
Goodwood Data Systems
Box 768
613-257-3610

HONG KONG
Kowloon
Goodwood Data Systems
6C-12 Broadway Ave. Mei Foo Sun
Chuen
3-7431161

GOULD INC, BIOMATION DIV

4600 Old Ironsides Dr
Santa Clara, CA 95050
408-988-6800
Contact: Dennis Dolan
■ Products & Services
Data content monitors
Electrical-parameters test equipment

Branch Sales Offices:

AL Huntsville
W A Brown Inst Inc
Box 4560
205-883-8660

AZ Scottsdale
BFA Corp
4426 N Saddlebag Tr
602-994-5400

CA Rodondo Beach
Ward/Davis Aassoc
2615 Manhattan Bch Blvd
213-973-7772

CA Santa Clara
Ward/Davis Aassoc
3329 Kifer Rd
408-245-3700

CA San Diego
Ward/Davis Aassoc
7263 Engineer Rd
714-292-1000

CO Denver
BFA Corp
12015 E 46 St
303-371-2422

CT N Haven
Pat Jenks Assoc
52 Washington Ave
203-281-0810

FL Orlando
W A Brown Inst Inc
Box 513
305-425-5505

FL Ft Lauderdale
W A Brown Inst Inc
961 NW 53 St
305-776-4800

FL Melbourne
W A Brown Inst Inc
Box 1406
305-723-0766

GA Atlanta
W A Brown Inst Inc
3871 NE Expy
404-455-1035

IL Chicago
Comtel/Pivan
3535 W Peterson Av
312-539-4838

IN Indianapolis
Comtel/Pivan
1259 W 86 St
317-253-1681

IA Cedar Rapids
Comtel/Pivan
204 Collins Rd NE
319-377-9434

KS Shawnee Mission
Comtel/Pivan
5920 Nall
913-722-1030

MA Wakefield
Pat Jenks Assoc
607 N Avenue
617-246-1590

MN Minneapolis
Comtel/Pivan
5100 Edina Ind Blvd
612-835-3060

MO St Louis
Comtel/Pivan
10270 Page BLvd
314-428-5508

NM Albuquerque
BFA Corp
1704 Moon NE
505-292-1212

NM Las Cruces
BFA Corp
Box 1237
505-524-9693

NM Albuquerque
Charles W Fowler Co
Box 5396
505-299-7676

NY DeWitt
D B Associates
Box 14
315-446-0220

NY Port Chester
Radiation Electronics
Box 564
914-937-2300

NC Durham
W A Brown Inst Inc
828 Glendale Ave
919-683-1580

OR Portland
Showalter Instruments Inc
5520 SW Macdom Ave
503-644-9164

PA Bensalem
Eastern Instrumentation
Street Rd & Bristol Pike
215-245-6660

SC Columbia
W A Brown Inst Inc
1234 St Andrews Rd
803-798-8070

TN Oak Ridge
W A Brown Inst Inc
733 Emory Valley Rd
615-482-5761

TX Dallas
Crockett Southwest Co
Box 47287
214-251-1776

TX Austin
Crockett Southwest Co
Box 5587
512-451-8269

TX Houston
Crockett Southwest Co
Box 94089
713-937-1836

UT Salt Lake City
BFA Corporation
140 W 2100 S
801-466-6522

VA McLean
Creative Marketing Assoc
6845 Elm St
703-893-6612

WA Bellevue
Showalter Instruments Inc
1521 130th NE
206-255-4922

WA Richland
Showalter Instruments Inc
1321 Kimball Ave
509-943-5288

WI Brookfield
Pivan Eng Co
3055 N Brookfield Rd
414-786-1940

BRITISH COLUMBIA, CANADA
Vancouver
Radionics Ltd
2182 W 12 Av
604-732-7317

ONTARIO, CANADA
Scarborough
Radionics Ltd
k 1240 Ellsmere

ONTARIO, CANADA
Ottawa
Radionics Ltd
2487 Kaladar Av
613-521-8251

QUEBEC, CANADA
Montreal
Radionics Ltd
195 Graveline St
514-735-2471

GRANGER ASSOCIATES
3101 Scott Blvd
Santa Clara, CA 95051
408-727-3101

GRAPHIC CONTROLS
COATED PROD DIV
189 Van Rensselaer St
Buffalo, NY 14240
716-853-7500
Advertising page 127
Contact: Richard Williams
■ Products & Services
Paper for terminals

Branch Sales Offices:

CA Atlanta
Graphic Controls/Coated Prod Div
2601 Flowers Rd
404-451-4738

CA Irvine
Graphic Controls/Coated Prod Div
17819 Gillette St
714-540-8313

CA Santa Clara
Graphic Controls/Coated Prod Div
3105 El Camino Real
408-241-7960

IL Schaumburg
Graphic Controls/Coated Prod Div
1016 Gloucester Harbor
312-980-9490

MD College Pk
Graphic Controls/Coated Prod Div
Box 410
301-779-0598

MA Accord
Graphic Controls/Coated Prod Div
Box 119
800-828-7978

MI Farmingdale
Graphic Controls/Coated Prod Div
29226 Orchard Rd
800-828-7978

MO Blue Springs
Graphic Controls/Coated Prod Div
1700 S 22 St
816-229-1077

NY Pt Washington
Graphic Controls/Coated Prod Div
9 Durban St
800-462-7332

TX Richardson
Graphic Controls/Coated Prod Div
777 S Central Exprwy
214-235-1237

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

GRINNELL FIRE PROTECTION
SYSTEMS CO

10 Dorrance St
Providence, RI 02903
401-456-5600
Contact: John P Riley
■ Products & Services
Fire detection/protection equipment

Branch Sales Offices:

RI Cranston
1467 Elmwood Ave
781-3800

GRUMMAN DATA SYSTEMS CORP

400 Crossways Park Dr
Woodbury, NY 11797
516-575-6624
Contact: Dave Schwartz
■ Products & Services
Microfilm equipment, systems and services
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Data communications software, intelligent
terminal vendors
Educational services
Maintenance organizations

Branch Sales Offices:

CA Calabasas
Grumman Data Sytems Corp
5145 Douglas Fir Rd
213-992-6500

NY Bethpage
Grumman Data Systems Corp
1111 Stewart Ave
516-575-6200

VA Arlington
Grumman Data Sytems Corp
1700 N Moore St
703-528-5900

GTE COMP-ACCT

5300 E. La Palma
Anaheim, CA 92807
714-779-3131
Contact: Duane F Newton
■ Products & Services
Minicomputers
Cassettes
Data entry terminals
Programmable terminals
Interactive terminals
Point of sale terminals
Video data terminals (KSR)

Branch Sales Offices:

CA Anaheim
GTE Comp Acct
5300 E La Palma Ave
714-779-3131

MD Baltimore
GTE Comp Acct
7000 Security Blvd
301-298-1100

GTE LENKURT INC

1105 County Rd
San Carlos, CA 94070
415-595-3000
Contact: John Stockford
■ Products & Services
Message (including telegraph) carriers
Satellite carriers
Specialized carriers
Telephone companies
Multiplexers, frequency division
Lightwave (fiber optic) systems
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband group (to 50 kb/s)
MIL 188C adapters

Branch Sales Offices:

CA San Carlos
GTE Lenkurt Inc
1105 County Rd
415-595-3000

GA Atlanta
GTE Lenkurt Inc
5780 Peachtree Dunwoody Rd NE
404-256-3000

IL Arlington Heights
GTE Lenkurt Inc
120 W Eastman St
312-398-6700

TX Wayco
GTE Lenkurt Inc
542 Haggart St
214-422-4305

VA Fairfax
GTE Lenkurt Inc
3015 Williams Dr
703-698-1850

GTE SATELLITE CORP

One Stamford Forum
Stamford, CT 06904
203-357-2000
Contact: R Cruz
■ Products & Services
Satellite carriers

GTE SYLVANIA/VOICE SECURITY

77 "A" St
Needham Heights, MA 02194
617-449-2000
Contact: F T Seery

■ Products & Services
Digitized-voice processors
Voice digitizers

Branch Sales Offices:

CA Mountain View
GTE Sylvania/Voice Security
100 Ferguson Dr
415-966-9111

MA Needham
GTE Sylvania/Voice Security
77 "A" St
617-449-2803

VA Arlington
GTE Sylvania/Voice Security
1800 N Kent St
703-841-9020

**GTE TELENET COMMUNICATIONS
CORP**

8330 Old Courthouse Rd
Vienna, VA 21180
703-827-9200
Contact: Henry R Nothhaft
■ Products & Services
Message (including telegraph) carriers
Packet-switching carriers
Value-added carriers
Concentrators
Message switchers
Minicomputers
Multiplexers, statistical (intelligent)
Packet processors
Remote network processors
Network management centers
Technical control centers
DDP systems
Interactive terminals
Portable data entry terminals
Video data terminals (KSR)
Computer/communications interfaces
Data security devices, personal
identification systems
Protocol converters
Switches, data communications, automatic

Branch Sales Offices:

CA Garden Grove
GTE Telenet Commun Corp
12832 Valley View
714-891-4481

CA Cupertino
GTE Telenet Commun Corp
20370 Town Center Ln
408-255-6450

CA Monica
GTE Telenet Commun Corp
3340 Ocean Park Blvd
213-450-0606

CO Englewood
GTE Telenet Commun Corp
5680 S Syracuse
303-741-2303

FL Tampa
GTE Telenet Commun Corp
406 Reo Rd
813-872-7555

GA Atlanta
GTE Telenet Commun Corp
One Perimeter Way
404-955-9025

IL Chicago
GTE Telenet Commun Corp
2 North LaSalle St
312-782-6119

KS Kansas City
GTE Telenet Commun Corp
4th & State Ave
913-321-0932

MA Boston
GTE Telenet Commun Corp
One Federal St
617-451-0048

MI Dearborn
GTE Telenet Commun Corp
One Parkland Blvd
313-336-8050

MN Minneapolis
GTE Telenet Commun Corp
5200 W 73rd St
612-831-2127

MO St Louis
GTE Telenet Commun Corp
111 Westport Plaza
314-434-1730

NJ Marlton
GTE Telenet Commun Corp
2001A Greentree
609-983-9600

NY New York
GTE Telenet Commun Corp
One Penn Plaza
212-594-6644

OH Beachwood
GTE Telenet Commun Corp
24200 Chagrin Blvd
216-831-6033

PA Pittsburgh
GTE Telenet Commun Corp
875 Greentree Rd
412-921-8736

TX Houston
GTE Telenet Commun Corp
5100 Westheimer
713-871-1243

TX Dallas
GTE Telenet Commun Corp
12200 Park Central Dr
214-661-3014

VA Arlington
GTE Telenet Commun Corp
1700 N Moore St
703-243-7510

HALCYON

2121 Zanker Rd
San Jose, CA 95131
408-293-9970

Advertising pages 82-83

Contact: E M Stein

■ Products & Services
Multiplexers, time division
Multiplexers, statistical (intelligent)
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Protocol analyzers
Response-time monitors

Branch Sales Offices:

CA San Jose
R Blama
2121 Zanker Rd
408-298-2065
DE Wilmington
C Hagerty
1600 Pennsylvania Ave
302-654-2611

GA Atlanta
R Davis
32 Perimeter Center
404-394-3730

IL Oak Brook
Neal Moore
2021 Spring Rd
312-325-8171

NJ Piscataway
M Tesoriere
255 Old New Brunswick Rd
201-981-0650

TX Fort Worth
R Wylie
4545 Bellaire Dr S
817-732-1851

HAMILTON SORTER COMPANY INC

3158 Production Dr
Fairfield, OH 45014
513-874-9498
Contact: Gordon F Kwiecinski
■ Products & Services
Furniture, cabinets, terminal enclosures

HARBOR ELECTRONICS

724 Danbury Rd
Ridgefield, CT 06877
203-438-9625
Contact: Peter T Henderson
■ Products & Services
Cables, electrical prefabricated extending
Computer/communications interfaces
Switches, data communications, manual

Branch Sales Offices:

CA Santa Clara
Harbor Electronics
2220 Bohannon Dr
408-249-9888

HARRIS CORP

COMPOSITION SYSTEMS DIV

505 John Rodes Blvd
Melbourne, FL 32901
305-242-5000
Contact: S S Skogen
■ Products & Services
Disc packs
Tape, magnetic
Tape punch/reader, paper
Data entry terminals
Graphic display terminals
Interactive terminals
Remote job entry terminals
Terminal controllers
Terminal interfaces
Video data terminals (RO)
Word processors, communicating
Data communications software,
communications processors vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA Culver City
Composition Systems Div
5839 Green Valley Cir
213-641-5032

MI Belleville
Composition Systems Div
152 Main St
313-697-2000

NY New York
Composition Systems Div
675 Third Ave
212-986-7600

HARRIS CORP

COMPUTER SYSTEMS DIV

2101 W Cypress Creek Rd
Fort Lauderdale, FL 33309
305-974-1700
Contact: J J Stives
■ Products & Services
DDP systems

Branch Sales Offices:

AZ Phoenix
Harris Computer Systems Div
2942 N 24 St
602-264-3846

CA San Mateo
Harris Computer Systems Div
1660 S Amphlett Blvd
415-349-5037

CA Costa Mesa
Harris Computer Systems Div
1503 S Coast Dr
714-957-6557

CA Culver City
Harris Computer Systems Div
59 Green Valley Cir
213-641-5032

CA San Diego
Harris Computer Systems Div
7801 Mission Center Ct
714-297-9254

CO Englewood
Harris Computer Systems Div
5660 S Syracuse Cir
303-770-1663

DC Washington
Harris Computer Systems Div
2600 Virginia Ave NW
202-342-3952

FL Ft Lauderdale
Harris Computer Systems Div
2101 Cypress Creek Rd
305-974-1700

FL Palm Bay
Harris Computer Systems Div
50 Woodlake Dr W
305-727-6390

GA Atlanta
Harris Computer Systems Div
875 Johnson Ferry Rd NE
404-256-4000

IL Des Plaines
Harris Computer Systems Div
3158 Des Plaines Ave
312-299-4427

KS Shawnee Mission
Harris Computer Systems Div
6811 West 63
913-384-0882

MA Burlington
Harris Computer Systems Div
5 Old Concord Rd
617-273-1020

MI Troy
Harris Computer Systems Div
5700 Crooks Rd
313-879-2021

MN Bloomington
Harris Computer Systems Div
2850 Metro Dr
612-854-7375

MO Brentwood
Harris Computer Systems Div
1750 Brentwood Blvd
314-961-9927

NJ Cherry Hill
Harris Computer Systems Div
800 Kings Hwy
609-779-8040

NY New York
Harris Computer Systems Div
675 Third Ave
212-986-7600

OH Cincinnati
Harris Computer Systems Div
4015 Executive Park Dr
513-769-6100

PA Pittsburgh
Harris Computer Systems Div
875 Greentree Rd
412-928-3660

TX Dallas
Harris Computer Systems Div
17120 Dallas Pkwy
214-934-4218

TX Houston
Harris Computer Systems Div
7000 Regency Sq Blvd
713-977-5501

WA Bellevue
Harris Computer Systems Div
10800 NE 8 St
206-453-0303

WI Madison
Harris Computer Systems Div
6701 Seybold Rd
608-271-9559

HARRIS CORP
DATA COMMUNICATIONS DIV
16001 Dallas Parkway; PO Box 400010
Dallas, TX 75240
214-386-2000
Contact: Neal Dempsey III
■ Products & Services
DDP systems
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors

HARRIS CORP LIGHTWAVE
COMMUNICATIONS OPN
Box 9550
Melbourne, FL 32901
305-724-3502
Contact: Richard Stackhouse
■ Products & Services
Lightwave (fiber optic) systems

Branch Sales Offices:

CA Santa Cruz
Harris Lightwave Communications
325 Plateau Ave
408-425-0185

CO Loveland
Harris Lightwave Communications
Box 912
303-669-7555

Know the product name? Turn
to **Products & Services Direc-**
tory, page 5 to find out who
makes it.

HARRIS-DARCONZ
6100 Kircher NE
Albuquerque, NM 87109
505-345-9061
Contact: Randall Smith
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
DDP systems
Automatic answering units
Data access arrangement devices
Fire detection/protection equipment
Switches, data communications, automatic
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

CA Sunnyvale
Ivan Gulick Associates
1085 Tasman Dr #899
408-745-7334

FL Avon Park
The Avanti Company
321 Tulane Cir
813-453-5336

OH West Lake
Ray E Saccany Co
31015 Center Ridge
216-835-4111

HAWAIIAN TELEPHONE CO
PO Box 2200
Honolulu, HI 96841
808-546-3000
Contact: Ronald Komata
■ Products & Services
Facsimile-service carriers
Message (including telegraph) carriers
Packet-switching carriers
Telephone companies
Computerized branch exchange (CBX)
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Port sharing units
Acoustic couplers
Channel service units
Lightwave (fiber optic) systems
Line drivers
Microwave/laser systems
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband group (to 50 kb/s)
MIL 188C adapters
Cassette drives
Disc drives, floppy
Tape punch/reader, paper
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Automatic answering units
Automatic calling units
Data access arrangement devices
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, manual
Data communications consultants
Maintenance organizations

HAZELTINE CORP
284 E Pulaski Rd
Greenlawn, NY 11740
516-549-8800
Contact: Ed Jeran
■ Products & Services
Video data terminals (KSR)

Branch Sales Offices:

CA Burlingame
Hazeltine Corp
433 Airport Blvd
415-342-6070

CA Century City
Hazeltine Corp
1801 Ave of Stars
213-553-1811

GA Atlanta
Hazeltine Corp
1945 The Exchange
404-952-8444

- IL** Oakbrook
Hazeltime Corp
800 Enterprise Dr
312-986-1414
- NJ** Flanders
Hazeltime Corp
169 Rt 296
201-584-4661
- NY** New York
Hazeltime Corp
1270 Av of Americas
212-586-1970
- TX** Dallas
Hazeltime Corp
7616 LBJ Freeway
214-980-9825
- VA** Arlington
Hazeltime Corp
2001 Jefferson Davis Hwy
703-979-5500
- ONTARIO, CANADA**
Mississauga
Data Terminal Mart
2703 Slough St
416-677-0184
- AUSTRALIA**
North Sydney
Mitsui Computer Systems (Aust)
Pty
79 West St
2 929 9921
- AUSTRIA**
Vienna
Neue Organisationsmaschinen Ges
mbH (NOG)
Untere Donavstrasse 13-15
222 248 414
- BELGIUM**
B-1030 Brussels
Geveke Electronics
Anatole Francestraat 119/121
2 241 4550
- CHILE**
Santiago
Sociedad Nacional de
Procesamiento de Datos (SONDA)
LTDA
Teatinos 554
2 622 777
- DENMARK**
4600 Koge
Trend Electronics
Tangmosevej 99
3 652 345
- ENGLAND**
Isleworth, Middlesex
Hazeltime Ltd
292, Worton Rd
TW7 6EL 1 568 1851
- FRANCE**
92120 Montrouge
Geveke Electronique SA
85-87 Avenue Jean-Jaures
1 654 1582
- GERMANY, WEST**
4000 Duesseldorf
Geveke Elektronik GmbH
Schlaegelstrasse 9
211 773 082
- HONG KONG**
Hong Kong
Oriental Data Systems Ltd
11/F Hutchison House
5 243 121
- ISRAEL**
Tel Aviv
Alpha Terminals Ltd
41 Hertselya Road
3 47 61 79
- ITALY**
20124 Milano
SEGI SRL
Via Timavo 12
2.60.73.255
- JAPAN**
Tokyo 160
Protech Inc
7-22-43 Nishi-Shinjuku
3 365 0751
- MEXICO**
Mexico 19 D F
Industrias Digitales SA
Plateros No 7-116
905-524-5132
- NETHERLANDS**
Amsterdam
Geveke Electronica BV
Kabelweg 25
20 802 802
- NEW ZEALAND**
Wellington
CBL Datacomm
89 Courtenay Pl
4-857-939
- NORWAY**
Oslo
Alf G Johnsen A/S
Brenneriveien 11
2-111-250
- SPAIN**
Barcelona
Infotecnos SA
Avda Infanta Carlota 191
3 322 0303
- SWITZERLAND**
CH-3011 Bern
Intertest AG
Aarbergergasse 46
31 224 481
- TAIWAN**
Taipei 105
Multitech International Corp
977 Min Shen E Rd
2 768 1232
- HEATH CO**
Hilltop Road
Benton Harbor, MI 49022
616-982-3411
■ Products & Services
Discs, floppy
Programmable terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Branch Sales Offices:
AZ Phoenix
Heathket Electronics Center
2727 W Indian School Rd
602-279-6247
CA Los Angeles
Heathket Electronics Center
2309 S Flower St
213-749-0261
CA La Mesa
Heathket Electronics Center
8363 Center Dr
714-461-0110
CA Anaheim
Heathket Electronics Center
330 E Ball Rd
714-776-9420
CA Redwood City
Heathket Electronics Center
2001 Middlefield Rd
415-365-8155
CA Woodland Hills
Heathket Electronics Center
22504 Ventura Blvd
213-883-0531
CA El Cerrito
Heathket Electronics Center
6000 Potrero Ave
415-236-8870
CA Pomona
Heathket Electronics Center
1555 N Orange Grove Ave
714-623-3543
CA Campbell
Heathket Electronics Center
2350 S Bascom Ave
408-377-8920
CA Sacramento
Heathket Electronics Center
1860 Fulton Ave
916-486-1575
CO Denver
Heathket Electronics Center
5940 W 38 Ave
303-422-3408
CT Avon
Heathket Electronics Center
395 W Main St
203-678-0323
FL Hialeah
Heathket Electronics Center
4705 W 16 Ave
305-823-2280
FL Tampa
Heathket Electronics Center
4019 W Hillsborough Ave
813-886-2541
GA Atlanta
Heathket Electronics Center
5285 Roswell Rd
404-252-4341
IL Chicago
Heathket Electronics Center
3462-66 W DeVon Ave
312-583-3920
IL Downers Grove
Heathket Electronics Center
224 Ogden Ave
312-852-1304
IN Indianapolis
Heathket Electronics Center
2112 E 62 St
317-257-4321
KS Mission
Heathket Electronics Center
5960 Lamar Ave
913-362-4486
KY Louisville
Heathket Electronics Center
12401 Shelbyville Rd
502-245-7811
LA Kenner
Heathket Electronics Center
1900 Veterans Memorial Hwy
504-467-6321
MD Rockville
Heathket Electronics Center
5542 Nicholson Ln
301-881-5420
MD Baltimore
Heathket Electronics Center
1713 E Joppa Rd
301-661-4446
MA Wellesley
Heathket Electronics Center
165 Worcester Ave
617-237-1510
MA Peabody
Heathket Electronics Center
242 Andover St
617-531-9330

- MI Detroit
Heathket Electronics Center
18645 W Eight Mile Rd
313-535-6480
- MI E Detroit
Heathket Electronics Center
18149 E 8 Mile Rd
313-772-0416
- MN Hopkins
Heathket Electronics Center
101 Shady Oak Rd
612-938-6371
- MN St Paul
Heathket Electronics Center
1645 White Bear Ave
612-778-1211
- MO Bridgeton
Heathket Electronics Center
3794 McKelvey Rd
314-291-1850
- NE Omaha
Heathket Electronics Center
9207 Maple St
402-391-2071
- NJ Fair Lawn
Heathket Electronics Center
35-07 Broadway
201-791-6935
- NJ Ocean
Heathket Electronics Center
1013 State Hwy #35
201-775-1231
- NY Jericho LI
Heathket Electronics Center
15 Jericho Tnpk
516-334-8181
- NY Amherst
Heathket Electronics Center
3476 Sheridan Dr
716-835-3090
- NY Rochester
Heathket Electronics Center
937 Jefferson Rd
716-244-5470
- NY No White Plains
Heathket Electronics Center
7 Reservoir Rd
914-761-7690
- OH Cleveland
Heathket Electronics Center
28100 Chagrin Blvd
216-292-7553
- OH Woodlawn
Heathket Electronics Center
10133 Springfield Pike
513-771-8850
- OH Columbus
Heathket Electronics Center
2500 Morse Rd
614-475-7200
- OH Toledo
Heathket Electronics Center
48 S Byrne Rd
419-537-1887
- OK Oklahoma City
Heathket Electronics Center
2727 NW Exprwy
405-848-7593
- PA Philadelphia
Heathket Electronics Center
6318 Roosevelt Blvd
215-288-0180
- PA Pittsburgh
Heathket Electronics Center
3482 Wm Penn Hwy
412-824-3564
- PA Frazer
Heathket Electronics Center
630 Lancaster Pike
215-647-5555
- RI Warwick
Heathket Electronics Center
558 Greenwich Ave
401-738-5150
- TX Houston
Heathket Electronics Center
1704 W Loop N
713-869-5263
- TX Dallas
Heathket Electronics Center
2715 Ross Ave
214-826-4053
- TX San Antonio
Heathket Electronics Center
7111 Blanco Rd
512-341-8876
- UT Midvale
Heathket Electronics Center
58 E 7200 S
801-566-4626
- VA Virginia Beach
Heathket Electronics Center
1055 Independence Blvd
804-460-0997
- VA Alexandria
Heathket Electronics Center
6201 Richmond Hwy
703-765-5515
- WA Seattle
Heathket Electronics Center
505 8th Ave
206-682-2172
- WI Milwaukee
Heathket Electronics Center
5215 W Fond du Lac Ave
414-873-8250
- ONTARIO, CANADA
Mississauga ON
Heathket Electronics Center
1480 Dundas Hwy E
416-277-3191
- IL Arlington Heights
Reshal Assoc
219 W University Dr
312-398-7660
- MI Brighton
Reshal Assoc
314 S Third St
313-227-1043
- MN Minneapolis
Reshal Assoc
10521 Lakefall Dr
612-941-8697
- PA Norristown
Datacomm Management Sciences
564 Longmedow Rd
215-539-1217
- UT Sandy
Hekimian Laboratories Inc
91435 Maison Dr
801-572-1739
- WA Seattle
CSS Telecommunications
15841 32nd St NE
206-367-1440
- ENGLAND
Tring, Hertfordshire
Genl Audio & Datacomm
70-80 Akeman St
4444-282-4011
- FRANCE
Le Chesnay
Welect
4 Rue de la Bourboulle
955-4787
- HELLMAN ASSOCIATES
299 California Ave
Palo Alto, CA 94306
415-328-4091
Contact: Martin E Hellman
■ Products & Services
Data security devices, encoder/decoders
Data communications consultants
Educational services
- HENDRIX
670 N Commercial St
Manchester, NH 03101
603-669-9050
Contact: Stephen R Silver
■ Products & Services
Electronic mailboxes
Data entry terminals
Teletypewriters
- Branch Sales Offices:
- CA Arcadia
Hendrix Electronics
351 E Foothill Blvd
213-357-7911
- GA Atlanta
Hendrix Electronics
6145 Barfield Rd
404-252-4902
- NH Nashua
Hendrix Electronics
491 Amherst St
603-883-1001
- NY New York
Hendrix Electronics
41 East 42 St
- VA Arlington
Hendrix Electronics
3030 N Fairfax Dr
703-528-4000

Want to receive announcements of new products?
Turn to **UpDate Service Card, page 201.**

HEKIMIAN LABS INC
15825 Shady Grove Rd
Rockville, MD 20850
301-948-8855
Contact: Robert L Fredrick
■ Products & Services
Electrical-parameters test equipment
Network management centers
Technical control centers
Selection & transfer equipment, monitor & test switching equipment

Branch Sales Offices:

- CA Mt View
CSS Telecommunications
2680 Bayshore Frontage Rd
415-964-4335
- CA Irvine
CSS Telecommunications
#3 Trenton St W
714-559-4403
- CT Stamford
Datacomm Management Sciences
900 Hope St
203-324-7597
- FL West Palm Beach
Hekimian Laboratories Inc
3814 Shelly Rd
305-683-9381
- GA Snellville
Hekimian Laboratories Inc
1979 Wickliffe Pl
404-972-7630

HETRA COMPUTER & COMMUNICATIONS INDUSTRIES INC

1151 S Eddie Allen Rd
Melbourne, FL 32901
305-723-7731

Contact: Bill Pearce

■ Products & Services

Minicomputers
Packet processors
Line drivers
Modem eliminators
MIL 188C adapters
Batch terminals
Data entry terminals
Programmable terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Terminal controllers
Computer/communications interfaces
Lease and resale organizations
Maintenance organizations

HEURISTICS INC

1285 Hammerwood Ave
Sunnyvale, CA 94086
408-734-8532

Contact: Tom Larson

■ Products & Services

Data entry terminals
Word processors, communicating
Voice adapters
Voice digitizers

Branch Sales Offices:

AZ Phoenix
PLS Associates
602-279-1531

CA La Crescenta
Beckrep Inc
213-957-1111

CA Mt View
Beckrep No CA
415-969-1855

CO Denver
PLS Associates
303-773-1218

CT Guilford
R H Sturdy
203-453-5424

FL Orlando
Technical Associates
305-894-7531

IL Arlington Heights
Dytec Central
312-394-3380

IN Indianapolis
Dytec Central
317-247-1316

IA Iowa City
Dytec Central
515-683-2282

MD Rockville
Mesa
301-881-8430

MA Wellesly Hills
R H Sturdy
617-235-2330

MI Madison Heights
WKM Associates
313-588-2300

MN St. Paul
Dytec North
612-645-5816

MO St. Louis
Dytec South
314-731-5400

NJ Ridgwood
Hanson & Highes NJ
201-652-7055

NM Albuquerque
PLS Associates
505-255-2330

NY Rochester
Ossman Instruments
716-473-5720

NY East Syracuse
Ossman Instruments
315-437-6666

NY Vestal
Ossman Instruments
607-785-9947

OH Cleveland
WKM Associates
216-267-0445

OH Dayton
WKM Associates
513-434-7500

OK Oklahoma City
Data Marketing Assoc
405-528-6071

OR Oregon City
Scientific Devices
503-292-6934

PA Ambler
Denco Data Equip Corp
215-542-9876

PA Pittsburg
WKM Associates
513-434-2500

SC Spartanburg
Technical Associates
803-579-2904

TX Austin
Data Marketing Assoc
512-451-5174

TX Dallas
Data Marketing Assoc
214-661-0300

TX Houston
Data Marketing Assoc
713-780-2511

TX San Antonio
Data Marketing Assoc
512-828-0937

UT Salt Lake City
PLS Associates
801-466-8729

WA Bellevue
Scientific Devices
206-454-0900

WA Kirkland
Scientific Devices
206-823-5265

BRITISH COLUMBIA, CANADA

Vancouver
Megatronix Ltd
604-734-8110

ONTARIO, CANADA

Ottawa
Megatronix Ltd
613-729-4004

ONTARIO, CANADA

Weston
Megatronix Ltd
416-742-8015

QUEBEC, CANADA

Montreal
Megatronix Ltd
514-488-0404

GERMANY, WEST

Berlin
Commandus KG
30-312-4091

HEWLETT-PACKARD CO

1501 Page Mill Rd
Palo Alto, CA 94304
415-856-1501

■ Products & Services

Front-end processors
Minicomputers
Remote network processors
Lightwave (fiber optic) systems
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Data content monitors
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Technical control centers
DDP systems
Local network systems
Database processors
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Disc drives, large
Disc packs
Floppy disc recorders
Tape drives, magnetic
Tape punch/reader, paper
Badge readers
Bar code readers
Batch terminals
Data entry terminals
Digital plotters
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Cables, lightwave (optical fiber)
Computer/communications interfaces
Error controllers
Paper for terminals
Power supplies
Ribbons and supplies for terminals and
printers
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Data communications software, intelligent
terminal vendors
Maintenance organizations

Branch Sales Offices:

AL Huntsville
Hewlett-Packard
8290 Whitesburg Dr SE
205-881-4591

AZ Phoenix
Hewlett-Packard
2336 E Magnolia St
602-244-1361

AZ Tucson
Hewlett-Packard
2424 Aragon Rd
602-294-3148

CA Fullerton
Hewlett-Packard
1430 E Orangethorpe Ave
714-870-1000

CA	North Hollywood Hewlett-Packard 3939 Lankershim Blvd 213-877-1282	MI	Farmington Hills Hewlett-Packard Co 23855 Research Dr 313-476-6400	PA	King of Prussia Hewlett-Packard Co 1021 8th Ave 215-265-7000
CA	Los Angeles Hewlett-Packard 6305 Arizona Pl 213-649-2511	MN	St Paul Hewlett-Packard Co 2400 N Prior Ave 612-536-0700	SC	Columbia Hewlett-Packard Co 6941 O N Trenholm Rd 803-782-6493
CA	Santa Clara Hewlett-Packard 3003 Scott Blvd 408-249-7000	MO	Kansas City Hewlett-Packard Co 11131 Colorado Ave 816-763-8000	TN	Memphis Hewlett-Packard Co 3027 Vanguard Dr 901-346-8370
CA	Sacramento Hewlett-Packard 646 W North Market Blvd 916-929-7222	MO	St Louis Hewlett-Packard Co 1024 Executive Pkwy 314-878-0200	TX	Richardson Hewlett-Packard Co 201 E Arapaho Rd 214-231-6101
CA	San Diego Hewlett-Packard 9606 Aero Dr; Box 23333 714-279-3200	NJ	Paramus Hewlett-Packard Co W 120 Century Rd 201-265-5000	TX	Houston Hewlett-Packard Co 10535 Harwin Dr 713-776-6400
CO	Englewood Hewlett-Packard 5600 S Ulster 303-771-3455	NJ	Eatontown Hewlett-Packard Co Crystal Brook Prof Bldg 201-542-1384	TX	San Antonio Hewlett-Packard Co 205 Billy Mitchell Rd 512-434-8241
CT	New Haven Hewlett-Packard 12 Lunar Dr 203-389-6551	NM	Albuquerque Hewlett-Packard Co Box 11634; 11300 Lomas Blvd NE 505-292-1330	UT	Salt Lake City Hewlett-Packard Co 2160 South 3270 W St 801-972-4711
FL	Ft Lauderdale Hewlett-Packard Box 24210 305-731-2020	NM	Las Cruces Hewlett-Packard Co 156 Wyatt Dr 505-526-2484	VA	Norfolk Hewlett-Packard Co No. 7 Koger Exec Center 804-461-4025/6
FL	Orlando Hewlett-Packard Box 13910; 6177 Lake Ellenor Dr 305-859-2900	NY	Albany Hewlett-Packard Co 6 Automation La 518-458-1550	VA	Richmond Hewlett-Packard Co 2914 Hungary Springs Rd 804-285-3431
FL	Pensacola Hewlett-Packard Box 12826 904-476-8422	NY	Poughkeepsie Hewlett-Packard Co 201 S Ave 914-454-7330	WA	Bellevue Hewlett-Packard Co 1203 114th Av SE 206-454-3971
GA	Atlanta Hewlett-Packard Box 105005 404-955-1500	NY	Rochester Hewlett-Packard Co 39 Saginaw Dr 716-473-9500	WI	West Ailis Hewlett-Packard Co 9004 W Lincoln Av 414-541-0550
GA	Warner Robins Hewlett-Packard Box 2103 912-922-0449	NY	Syracuse Hewlett-Packard Co 5858 E Molloy Rd 315-454-2486	ALBERTA, CANADA	Edmonton Hewlett-Packard (Canada) Ltd 11620A 168 St 403-452-3670
HI	Honolulu Hewlett-Packard 2875 S King St 808-955-4455	NY	Woodbury Hewlett-Packard Co 1 Crossways Park W 516-921-0300	ALBERTA, CANADA	Calgary Hewlett-Packard (Canada) Ltd 210.7220 Fisher St SE 403-253-2713
IL	Rolling Meadows Hewlett-Packard 5201 Tollview Dr 312-255-9800	NC	High Point Hewlett-Packard Co 1923 N Main St 919-865-8101	BRITISH COLUMBIA, CANADA	Vancouver Hewlett-Packard (Canada) Ltd 837 E Cordova St 604-254-0531
IN	Indianapolis Hewlett-Packard 7301 N Shadeland Ave 317-842-1000	OH	Cleveland Hewlett-Packard Co 16500 Sprague Rd 216-243-7300	MANITOBA, CANADA	Winnipeg Hewlett-Packard (Canada) Ltd 513 Century St 204-786-7581
IA	Iowa City Hewlett-Packard 1902 Broadway 319-338-9466	OH	Dayton Hewlett-Packard Co 330 Progress Rd 513-859-8202	PRINCE EDWARD ISLAND, CANADA	Dartmouth Hewlett-Packard (Canada) Ltd 800 Windmill Rd 902-469-7820
LA	Kenner Hewlett-Packard 3229-39 Williams Blvd 504-443-6201	OH	Columbus Hewlett-Packard Co 1041 Kingsmill Pkwy 614-436-1041	ONTARIO, CANADA	Ottawa Hewlett-Packard (Canada) Ltd 1020 Morrison Dr 613-820-6483
MD	Baltimore Hewlett-Packard 6707 Whitestone Rd 301-944-5400	OK	Oklahoma City Hewlett-Packard Co Box 32008 405-721-0200	ONTARIO, CANADA	Mississauga Hewlett-Packard (Canada) Ltd 6877 Goreway Dr 416-678-9430
MD	Rockville Hewlett-Packard 2 Choke Cherry Rd 301-948-6370	OR	Tualatin Hewlett-Packard Co 17890 SW Lower Boones Ferry Rd 503-620-3350		
MA	Lexington 32 Hartwell Ave 617-861-8960				

Products are listed alphabetically in the **Products & Services Directory**, page 5

QUEBEC, CANADA

Pointe Claire
Hewlett-Packard (Canada) Ltd
275 Hymus Blvd
514-697-4232

AUSTRIA

Vienna
Hewlett-Packard Ges mbH
Handelskai 52
0222-351621

BELGIUM

Brussels
Hewlett-Packard Benelux
Ave de Col Vert 1
02-672-22-40

DENMARK

Birkeroed
Hewlett-Packard A/S
DK-3460
02-81-66-40

DENMARK

Silkeborg
Hewlett-Packard A/S
DK-8600
06-82-71-66

ENGLAND

Winnersh, Wokingham
Hewlett-Packard Ltd
King Street La
0734-78-47-74

ENGLAND

Altrincham
Hewlett-Packard Ltd
Navagation Road
061-928-6422

ENGLAND

Redhill Surrey
Hewlett-Packard Ltd
106-118 Station Rd
01-684-0103/8

ENGLAND

New Town
Hewlett-Packard Ltd
South Serviceholesale Centre;
Washington
Washington 464001

ENGLAND

Castleford, W Yorkshire
Hewlett-Packard Ltd
10, Wesley St
09775-50402

FINLAND

Helsinki
Hewlett-Packard OY
Nahkahousuntie 5
90-6923031

FRANCE

Orsay
Hewlett-Packard France
Quartier de Courtaboeuf
1-907-78-25

FRANCE

Eculty
Hewlett-Packard France
78-33-81-25

FRANCE

Toulouse-Le Mirail
Hewlett-Packard France
Chemin de la Cepidre
61-40-11-12

FRANCE

Marignane
Hewlett-Packard France
91-89-12-36

FRANCE

Strasbourg
Hewlett-Packard France
88-35-20/21

FRANCE

Lille
Hewlett-Packard France
rue Colbert
20-51-44-14

FRANCE

Le Blanc Mesnil Cedex
Hewlett-Packard France
Rue de La Commune de Paris
01-931-88-50

GERMANY, WEST

Hannover-Kleefeld
Hewlett-Packard GmbH
Am Grossmarkt 6
0511-46-60-01

GERMANY, WEST

Frankfurt
Hewlett-Packard GmbH
Bernerstrasse 117
0611-50-04-1

GERMANY, WEST

Boblingen, Wurttemberg
Hewlett-Packard GmbH
Herrenbergerstrasse 110
07031-667-1

GERMANY, WEST

Dusseldorf
Hewlett-Packard GmbH
Emanuel-Leutze-Str. 1

GERMANY, WEST

Hamburg
Hewlett-Packard GmbH
Wendenstrasse 23
040-24-13-93

GERMANY, WEST

Karlsruhe
Hewlett-Packard GmbH
Ohmstrasse 6
0721-69-40-06

GERMANY, WEST

Nuremberg
Hewlett-Packard GmbH
Neumeyer Str. 90
0911-56-30-83/85

GERMANY, WEST

Ottobrunn
Hewlett-Packard GmbH
Unterhachinger Strasse 28
089-601-30-61/7

GERMANY, WEST

Berlin
Hewlett-Packard GmbH
Keith Strasse 2-4
030-24-90-86

ITALY

Milano
Hewlett-Packard Italiana SpA
Via Amerigo Vespucci 2
2-6251 (10 lines)

ITALY

Roma
Hewlett-Packard Italiana SpA
Via G. Armellini 10
06-54-69-61

ITALY

Napoli
Hewlett-Packard Italiana SpA
Via Amerigo Vespucci 9
081-33-71-11

ITALY

Padova
Hewlett-Packard Italiana SpA
Via Pietro Maroncelli 40
49-66-48-88

ITALY

Torino
Hewlett-Packard Italiana SpA
Corso Giovanni Lanza 94
011-682245

NETHERLANDS

Amstelveen
Hewlett-Packard Benelux NV
Van Heuven Goethartlaan 121
020-47-20-21

NORWAY

Haslum
Hewlett-Packard Norge A/S
Nesveien 13
02-53-83-60

SAUDI ARABIA

Jeddah
Hewlett-Packard Co
King Abdul Aziz str., Box 1228
31173-332201

SPAIN

Madrid
Hewlett-Packard Espanola, SA
Jerez, Calle 3
1-458-26-00

SPAIN

Barcelona
Hewlett-Packard Espanola, SA
Milanesado 21-23
3-203-6200

SWEDEN

Bromma
Hewlett-Packard Sverige AB
Enighetsvagen 1-3
08-730-05-50

SWEDEN

Orebro
Hewlett-Packard Sverige AB
Ostra Vintergatan 22
019-14-07-20

SWITZERLAND

Schlieren-Zurich
Hewlett-Packard (Schweiz) AG
Zurcherstrasse 20
01-730-52-40

SWITZERLAND

Le Lignon-Geneva
Hewlett-Packard (schweiz) AG
Chateau Bloc 19
022-96-03-22

HICO HORIZONS INTL CO

716 Willow Rd
Menlo Park, CA 94025
415-328-1111
Contact: Charles R Long
■ Products & Services
Cartridges
Cartridge drives
Cassettes
Cassette drives
Tape drives, magnetic

Branch Sales Offices:

CA Menlo Park
Long & Assoc
716 Willow Rd
415-328-1111

CA Buena Park
Rock Associates
8494 Poppy Way
714-521-6980

CO Parker
A-5 Company
6559 Main St
303-841-3651

CT Winsted
Motoreps
100 Whiting St
203-379-8501

FL St Petersburg
Tech-Rep Assoc Inc
3251 Tech Dr N
813-577-2779

FL West Palm Beach
Tech-Rep Assoc Inc
11546 59 St N
305-793-5334

FL Orlando
Tech-Rep Assoc Inc
Box 13228
305-855-2648

GA Atlanta
MacKay Smith Associates
4126 Pleasantdale Rd
404-449-7444

IL Chicago
Engineered Sales Co
7311 W Lawrence
312-867-8434

MD Baltimore
R L Wilkinson Inc
707 Stevenson La
301-377-7800

MA Needham
Motoreps
10 Kearney Rd
617-449-3252

MN St Paul
ArkCo
1737 Cope Ave
612-482-9276

NJ Red Bank
Motoreps
157 Broad St
201-741-3356

NY Buffalo
H C Johnson Agencies
8 Los Robles St
716-632-7880

NY Rochester
H C Johnson Agencies
875 Atlantic Ave
716-482-3000

NY Albany
H C Johnson Agencies
105 Wolf Rd
518-459-1239

NC Charlotte
MacKay Smith Associates
501 Archdale
707-527-0240

OH Dayton
Electrical Systems Co
270 Regency Ridge
513-434-9822

OH Springfield
Electrical Systems Co
Box 336
513-399-8022

PA Glenside
R L Wilkinson Inc
Box 215
215-887-5300

PA Glenshaw
H C Johnson Agencies Inc
226 South Magnolia Dr
412-961-0414

TX Dallas
Kruvand Assoc
10300 N Central Expwy
214-691-4592

TX Houston
Kruvand Assoc
7333 Harwin Dr
713-780-9710

TX Austin
Kruvand Associates Inc
8330 Burnet Rd
512-458-9204

HITACHI AMERICA LTD
COMPUTER SALES & SERVICE DIV
100 California St
San Francisco, CA 94111
415-981-7871
Contact: K Fudono
■ Products & Services
Disc drives, floppy
Disc drives, large
Disc packs
Tape drives, magnetic

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

HITACHI AMERICA LTD
2696 Peachtree Sq
Doraville, GA 30360
404-458-6921
■ Products & Services
Computerized branch exchange (CBX)
Message switchers
Packet processors

HONEYWELL INFORMATION SYSTEMS

200 Smith St
Waltham, MA 02154
617-895-6000
Contact: Michael Keliher
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Modem sharing units
Packet processors
Remote network processors
Modem eliminators
DDP systems
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Terminal controllers
Video data terminals (KSR)
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations
Timesharing/service bureaus

HUMAN DESIGN SYSTEMS INC

3700 Market St
Philadelphia, PA 19104
215-382-5000
Contact: Jack Bartlett
■ Products & Services
Graphic display terminals
Programmable terminals
Portable data entry terminals
Video data terminals (KSR)
Branch Sales Offices:
CA Burlingame
Human Designed Systems
801 Mahler Rd
415-692-4184

DE Hockessin
Infocon
RD 2
302-239-7868

MD Bethesda
International Systems Mktg
5161 River Rd
301-986-0773

MA Dedham
Human Designed Systems
850-R Providence Hwy
617-329-3510

NY N Syracuse
Naco Electronics
Box 276
315-699-2651

ONTARIO, CANADA
Toronto
Cail Systems Ltd
92 Ridgewale Dr
416-782-1151

HYDRIL CONTROL SYSTEMS DIV

8383 Commerce Pk Dr
Houston, TX 77036
713-777-5361
Contact: H A Becker
■ Products & Services
Front-end processors
Modems, voice-grade, low-speed
(0-1,200 b/s)
Terminal controllers
Branch Sales Offices:
CA Encino
Hydril Control Systems Div
5535 Balboa
213-981-5206

NY Westbury
Tech Rep Eng Sales
51 Boyd Dr
516-997-7946

TX Midland
Hydril Control Systems Div
Box 134
915-682-5651

IBM OFFICE PRODUCTS DIV.

Parsons Pond Rd
Franklin Lakes, NJ 07417
Contact: Local branch sales office
■ Products & Services
Local network systems
Word processors, communicating

IDENTIFICATION SYSTEMS INC

4 High St
Acton, MA 01720
617-263-2111
Contact: Ronald A Wilfert
■ Products & Services
Badge readers
Data security devices, personal
identification systems

IESI INC

408 NE 72 St
Seattle, WA 98115
910-444-4036
Contact: Rob Brown
■ Products & Services
Batch terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote job entry terminals
Teleprinters, non-impact
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA Anaheim
Centauri of CA
720 N Valley
714-778-6163

MI Livonia
Tardem Assoc
31039 Schoolcraft
313-427-4800

NY Larchmont
IESI Inc
626A Larchmont Acres
914-834-3484

NC Charlotte
GLS Inc
6140 Sharon Rd
704-527-5950

OH Kettering
IESI Inc
1639 Beaver Ridge Dr
513-293-9842

OR Portland
Centauri Corp
516 SE Morrison
503-238-1320

TX Richardson
Corporation for Distributed
Systems
300 Bishop
214-234-1230

PUERTO RICO
Rio Piedras
Management Data Inc
La Electronica Bldg
746-5592

AUSTRALIA
Chatswood
Saztec (Equipment) Pty Ltd
815 Pacific Hwy
411-5377

IMAGE SYSTEMS INC

11244 Playa Ct
Culver City, CA 90230
213-390-3378

Contact: B J Rogers
■ Products & Services
Microfilm equipment, systems and services

Branch Sales Offices:

CA Culver City
Image Systems Inc
11244 Playa Ct
213-390-3378

NY New York
Image Systems Inc
225 Park Ave S
212-677-1510

IMP ELECTRONICS DIVISION INDUSTRIAL MACHINE PARTS INC

1008 G Astoria Blvd
Cherry Hill, NJ 08003
609-424-2950
Contact: Thomas Williams
■ Products & Services
Protocol analyzers

Branch Sales Offices:

NJ Cherry Hill
IMP Electronics Div of
Industrial Machine Parts Inc
1008 G Astoria Blvd
609-424-2950

NY New York
Kenneth Love Associates
44 West 62nd St
212-541-4885

INDUSTRIAL COMPUTER CONTROLS INC

196 Broadway
Cambridge, MA 02139
617-864-0283

Contact: David P Misunas
■ Products & Services
Message switchers
Computer/communications interfaces
Protocol converters
Satellite delay compensation units

Branch Sales Offices:

CA Los Alamitos
CSS Telecommunications
Specialists
10915 Bloomfield Ave
213-594-4574

CA Mountain View
CSS Telecommunications
Specialists
2680 Bayshore Frontage Rd
415-964-4335

GA Atlanta
Flex-Comm International Inc
3379 Peachtree Rd NE
404-237-9242

LA Lafayette
Comspec Inc
403 Mecca Dr
318-232-6275

MD Rockville
J4 Systems
50 W Montgomery Ave
301-424-4144

OK Tulsa
Comspec Inc
Box 7597
918-743-6892

TX Richardson
Comspec Inc
717 Lingo
214-234-4137

TX Austin
Comspec Inc
Box 15911
512-837-3881

TX Houston
Comspec Inc
Box 79438
713-461-4487

WA Seattle
CSS Telecommunications
Specialists
8609 Roosevelt Way NE
206-527-4750

QUEBEC, CANADA

St Lambert
Commetrics Ltd
Box 278
514-672-4534

INFOLINK DATA COMMUNICATIONS

7655 Convoy Court
San Diego, CA 92111
714-569-1752

Contact: James L Bender
■ Products & Services
Concentrators
Front-end processors
Minicomputers
Multiplexers, time division
Remote network processors
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modem eliminators
DDP systems
Tape, magnetic
Tape drives, magnetic
Audio response units

Video data terminals (KSR)
Automatic answering units
Data access arrangement devices
Maintenance organizations

Branch Sales Offices:

CA San Diego
Infolink Data Communications
7655 Convoy Ct
714-569-1752

GA Atlanta
Infolink Data Communications
5600 Rosewell Rd NW
404-252-2316

IL Lake Bluff
Infolink Data Communications
Box 440
312-295-6699

NJ Englishtown
Infolink Data Communications
23 Arbach Ln
201-536-5990

NY Larkspur
Infolink Data Communications
700 Larkspur Landing Cir
415-461-2673

TX Dallas
Infolink Data Communications
Box 400636
214-386-6380

INFORMATICS INC

21031 Ventura Blvd
Woodland Hills, CA 91364
213-887-9040

Contact: Werner L Frank
■ Products & Services
DDP systems
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

Timesharing/service bureaus

Branch Sales Offices:

CA Canoga Park
Informatics Inc
21050 Vanowen St
213-887-9121

CA Marina del Rey
Informatics Inc
4640 Admiralty Way
213-822-3552

CA Century City
Informatics Inc
10100 Santa Monica Blvd
213-553-3524

CA Palo Alto
Informatics Inc
1121 San Antonio Rd
415-964-9900

CA Los Angeles
Informatics Inc
3255 Wilshire Blvd
213-386-0400

CA San Francisco
Informatics Inc
One Market Plaza
415-777-1536

CA Newport Beach
Informatics Inc
4019 Westerly Pl
714-752-2488

CO Colorado Springs
Informatics Inc
2132 E Bijou St
303-635-5753

FL Miami
Informatics Inc
9703 Dixie Hwy No 19
305-661-7223

GA Atlanta
Informatics Inc
340 Interstate N Pkwy
404-955-2518

IL Des Plaines
Informatics Inc
701 Lee St
312-298-9300

MD Rockville
Informatics Inc
6011 Executive Blvd
301-770-3000

MD Rockville
Informatics Inc
1776 E Jefferson
301-468-2600

MD Riverdale
Informatics Inc
6811 Kenilworth Ave
301-699-7700

MA Boston
Informatics Inc
100 Summer St
617-423-6780

MA Burlington
Informatics Inc
Exec Place II 44 Mall Rd
617-273-4570

MN Minneapolis
Informatics Inc
5200 W 73 St
612-835-2946

NE Bellevue
Informatics Inc
1508 Kennedy Dr
402-291-8300

NH Bedford
Informatics Inc
One Bedford Farms
603-627-2500

NJ River Edge
Informatics Inc
65 Route 4
201-488-2100

NJ Fairfield
Informatics Inc
6 Kingsbridge Rd
201-575-2916

NJ Mt Laurel
Informatics Inc
125 Gaither Dr
609-234-9106

NY New York
Informatics Inc
1500 Broadway
212-869-1750

NY New York
Informatics Inc
555 Madison Ave
212-935-6500

NY Woodbury
Informatics Inc
20 Crossways Park N
516-575-3282

NC Raleigh
Informatics Inc
4904 Professional Ct
919-872-7800

OH Columbus
Informatics Inc
1651 NW Prof Plaza
614-457-7250

PA Pittsburgh
Informatics Inc
670 Rodi Rd
412-371-4902

TX Ft Worth
Informatics Inc
3424 Hilldale Rd
817-731-3766

TX Dallas
Informatics Inc
10300 N Centraal Expwy
214-696-1900

TX Houston
Informatics Inc
1035 Dairy-Ashford
713-493-6681

VA McLean
Informatics Inc
7926 Jones Branch Dr
703-821-5900

WA Seattle
Informatics Inc
17930 Pacific Hwy S
206-246-7390

ONTARIO, CANADA
Willowdale
Mark IV Informatics Canada Ltd
2 Lansing Square
416-493-9716

BRAZIL
Sao Paulo
Informatics Do Brasil
Av Brig Faria Lima 1541
813-4141

DENMARK
Copenhagen
Informatics P & W Aps
Zinnsgrade 7
01-26-27-28

ENGLAND
London
Informatics Consulting Ltd
64-78 Kingsway
01-831-6715

FRANCE
Paris
Informatics (France) SA
41 Rue Ybry
758 12 40

GERMANY, WEST
Bad Homburg
Informatics GmbH
128 Louisenstrasse
06172-44016

HONG KONG
Hong Kong
Informatics Inc
Galuxe Bldg 8-10 On Lan St
Central
5-250541

JAPAN
Tokyo
Informatics Japan Ltd
2-3-1 Hitotsubashi
03-263-7241

SWITZERLAND
Geneva
Informatics SA
267 route de Meyrin
41-022-82-51-51

INFORMATION CONTROL CORP

9610 Bellanca Ave
LA, CA 90045
213-641-8520
Contact: Carol Smith
■ Products & Services
Disc drives, floppy
Bar code readers

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

INFORMATION TECHNOLOGY INC

56 Kerney Road
Needham, MA 02194
Contact: L F D'Innocenzo

Branch Sales Offices:

CA Long Beach
Information Technology Inc
1653 E 28 St
213-595-1257

NY New York
Information Technology Inc
One World Trade Ctr
212-938-5945

TX Houston
Information Technology Inc
One Allen Ctr
713-759-0730

INFORMER INC

8332 Osage Ave; PO Box 91054
Los Angeles, CA 90045
213-649-2030

Contact: Wilfred R Little

■ Products & Services
Data content monitors
Bar code readers
Batch terminals
Data entry terminals
Programmable terminals
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AZ Seattle
Delcom Sales Co
144 SW 153 St
206-248-0090

CA Los Angeles
Informer Inc
8332 Osage Ave
213-649-2030

CA Sunnyvale
RC Data Inc
528 Weddell St
408-745-7410

CO Littleton
Dapel Inc
5575 S Sycamore
303-798-6538

FL Orlando
FM Associates Ltd
5018 Mortier Ave
305-851-5710

MN St Paul
Countryman Assoc
1821 University Av
612-645-9151

MO St Johns
Midwest Marketing
3606 Woodson Rd
314-426-2500

NY Hartsdale
Informer Inc
120 E Hartsdale Ave
914-592-6666

OH Cleveland
Electro Sales Assoc
851 E 222 St
216-261-5440

TX Dallas
US Data Assoc
14241 Proton Rd
214-661-9633

INFOTRON SYSTEMS CORPORATION

Cherry Hill Ind Center
Cherry Hill, NJ 08003
609-424-9400

Advertising page 39

Contact: Jeff Kraengel

■ Products & Services

Concentrators

Multiplexers, time division

Multiplexers, statistical (intelligent)

Port selectors

Modems, voice-grade, low-speed
(0-1,200 b/s)

Modems, voice-grade, medium speed
(1,800-3,600 b/s)

Modems, voice-grade, high-speed
(4,800-9,600 b/s)

Data content monitors

Electrical-parameters test equipment

Branch Sales Offices:

NJ Cherry Hill
Infotron Systems Corp
Cherry Hill Industrial Ctr
800-257-8352

ENGLAND

Dorchester
Infotron Systems Ltd
Systems House
0305-66016

GERMANY, WEST

Porz
Telonic Berkeley GmbH
Friedrichstra3e 14-16; D-5000
Köln 90
0-22-03

INMAC

2465 Augustine Dr
Santa Clara, CA 95051
408-727-1970

Contact: Lee Fissette

■ Products & Services

Modems, voice-grade, low-speed
(0-1,200 b/s)

Modem eliminators

Cartridges

Cassettes

Discs, floppy

Disc packs

Tape, magnetic

Tape, paper

Tape punch/reader, paper

Cables, electrical prefabricated extending

Computer/communications interfaces

Data jacks and plugs

Data security devices, software security

modules

Fire detection/protection equipment

Furniture, cabinets, terminal enclosures

Paper for terminals

Ribbons and supplies for terminals and

printers

Switches, data communications, manual

Uninterruptible power supplies, line

correctors, etc

Branch Sales Offices:

CA Sunnyvale
Inmac
130 S Wolfe Rd
408-737-8700

NJ

Norwood
Inmac
70 Oak St
201-767-3601

INNOVATIVE DATA TECHNOLOGY

4060 Morena Blvd
San Diego, CA 92117
714-770-3990
Contact: Gary E Pyles

■ Products & Services

Cartridge drives

Tape drives, magnetic

Branch Sales Offices:

AL Huntsville
Scientific Devices Southeast Inc
904 Bob Wallace Ave
205-536-1969

AZ Scottsdale
Barnhill Three Inc
7319 E Stetson Dr
602-947-7841

CA Garden Grove
Advanced Digital Group Inc
12062 Valley View St
714-897-0319

CA Carson
C V S
22010 S Wilmington Ave
213-549-6981

CA San Diego
Mesa Engineering & Sales Assoc
7525 Convoy Ct
714-278-8021

CA San Jose
PBC Associates Inc
1926 Quebec Way
408-377-7001

CO Englewood
Barnhill Three Inc
7076 S Alton Way
303-947-7841

CT Stratford
Instrument Dynamics
Foot of Broad St
203-378-6019

FL Orlando
Scientific Devices Southeast Inc
806 Twenty-Sixth St
305-841-8180

FL Shalimar
Scientific Devices Southeast Inc
47 Meigs Dr
904-651-4407

IL Northbrook
Resource Date Systems
801 Skokie Blvd
312-564-5440

IN Carmel
Carter McCormick & Peirce
1717 E 116th St
317-844-4175

KS Shawnee
Atech
10290 59th Terrace
913-268-9644

MA Wakefield
Instrument Dynamics
Lakeside Office Pk
617-245-5100

MI Farmington Hills
Carter McCormick & Peirce
23995 Freeway Park Dr
313-477-7700

MN Elkriver
Prairie Associates
Box 33
612-441-6190

MO St Louis
Atech
10270 Pate
314-428-7447

NJ Ramsey
Tandberg Data Inc
Box 321
201-825-7640

NM Albuquerque
Barnhill Three Inc
1410-D Wyoming NE
505-299-7658

NC Winston-Salem
Scientific Devices Southeast Inc
Box 11136
919-765-5776

OH Cleveland
Carter McCormick & Peirce
22650 Lorain Rd
216-779-5100

OH Dayton
Carter McCormick & Peirce
4977 Northcutt Pl
513-222-7700

OR Portland
Electronic Sources Inc
5319 SW Westgate Dr
503-292-0701

PA Pittsburgh
Carter McCormick & Peirce
409 Beatty Rd
412-372-4415

TX Austin
Barnhill Two Inc
111 W Anderson Lane
512-451-0217

TX Houston
Barnhill Two Inc
10606 Hempstead Hwy
713-688-9971

TX Richardson
Barnhill Two Inc
1101 Executive Dr E
214-231-2573

UT Murray
Barnhill Three Inc
5180 South 300 West
810-262-3000

VA McLean
Scientific Devices Inc
7700 Old Springhouse Rd
703-893-6513

WA Bellevue
Electronic Sources Inc
1406-140th Place NE
206-643-0400

ALBERTA, CANADA

Calgary
Associated Test Equipment Ltd
4216-12th Street NE
403-230-1697

BRITISH COLUMBIA, CANADA

Vancouver
Associated Test Equipment Ltd
303-1037 West Broadway
604-734-2012

ONTARIO, CANADA

Scarborough
Associated Test Equipment Ltd
3530 Pharmacy Ave

ONTARIO, CANADA

Ottawa
Associated Test Equipment Ltd
1704 Carling Ave
613-728-3717

QUEBEC, CANADA

Montreal
Associated Test Equipment Ltd
3300 Cavendish Blvd
514-481-7733

INNOVATIVE ELECTRONICS INC

15200 NW 60th Ave
Miami Lakes, FL 33014
305-558-1591

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Contact: Michael B Coffee

■ Products & Services

Concentrators

Front-end processors

Line sharing units

Modem sharing units

Inverse multiplexers
Port selectors
Port sharing units
Remote network processors
RTS emulator
Data entry terminals
Remote line printers
Teleprinters
Teleprinters, impact
Teletypewriters
Terminal controllers
Terminal interfaces
Code converters
Computer/communications interfaces
Data compression devices
Error controllers
Protocol converters

INTECOM INC

16509 Addison Rd
Dallas, TX 75240
214-233-0566
Contact: Tom Aschenbrenner
■ Products & Services
Computerized branch exchange (CEX)
Network management centers
Switches, data communications, automatic

Branch Sales Offices:

CA Los Angeles
Intecom Inc
9550 Warner Ave
714-963-8080
NY New York
Intecom Inc
575 Madison Ave
212-838-2762

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

INTEGRAL DATA SYSTEMS INC

14 Tech Circle
Natick, MA 01760
617-237-7610
Contact: Sales Dept
■ Products & Services
Teleprinters, impact

Branch Sales Offices:

AL Huntsville
Gentry Assoc Inc
2109 W Clinton Ave
205-534-9771
AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400
CA Redonda Bch
Group III EElectronic
2615 Manhattan Beach
213-973-7844
CA San Diego
Group III EElectronic
7263 Engineer Rd
714-292-0525
CA Sunnyvale
Group III EElectronic
542 Lakeside Dr
408-245-4392
CO Denver
BFA Corp
12015 E 46 Ave
303-371-2422
CT Hamden
Datcom Inc
1 Evergreen Ave
203-288-7005
FL Orlando
Gentry Assoc Inc
7527 Currency Dr
305-859-7450
GA Roswell
Gentry Assoc Inc
9800 Grimes Bridge Rd
404-998-2828
IL Arlington Hts
Dytec/Central
315 W University Dr
312-394-3380
IN Indianapolis
Dytec/Central
25 Beachway Dr
317-247-1316
IA Iowa City
Dytec/Iowa
Box 2148
319-683-2282
LA Gretna
Gentry Assoc Inc
1799 Stumpf Blvd
504-367-3975
MD Gaithersburg
MESA Inc
16021 Industrial Dr
301-948-4350
MA Waltham
Datcom Inc
55 Moody St
617-891-4600
MI Madison Hts
WKM Assoc Inc
345 Girard
313-588-2300
MN St Paul
Dytec/North
1821 University Ave
612-645-5816
MO Hazelwood
Dytec/South
320 Brooks Dr
314-731-5400
NM Albuquerque
BFA Corp
1704 Moon NE
505-292-1212
NM Las Cruces
BFA Corp
532 E Amador Ave
505-523-0601
NY Elmont
Crane & Egert Corp
146 Meacham Ave
516-488-2100
NY N Syracuse
NACO Electronics Inc
Box 276
315-699-2651
NC Burlington
Gentry Assoc Inc
428 Alamance Rd
919-227-3639
OH Dayton
WKM Assoc Inc
7913 S Suburban Rd
513-434-7500
OH Cleveland
WKM Assoc Inc
16141 Puritas Ave
216-267-0445
OR Portland
Pacific Northwest Electronic
2035 SW 58
503-292-3505
PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953
TX Dallas
Mycrosystems Marketing Inc
13777 N Central Exp
214-238-7157
TX San Antonio
Mycrosystems Marketing Inc
4502 Centerview
512-735-5073
TX Strafford
Mycrosystems Marketing Inc
10707 Corporate Dr
713-783-2900
UT Salt Lake City
BFA Corp
395 Lawndale Dr
801-466-6522
WA Bellevue
Pacific Northwest Electronic
14264 SE East Gateway
206-641-6444

INTEGRATED SOFTWARE SYSTEMS CORP

4186 Sorrento Valley Blvd; Suite C
San Diego, CA 92121
714-452-0170

Contact: Robert W Adams
■ Products & Services
Data communications software, independent software houses

Branch Sales Offices:

CO Littleton
Davis Assoc Inc
709 W Littleton Blvd
303-795-1400
DC Washington
Applied Urbanetics
1701 K St NW
202-331-1800
GA Atlanta
Dybell/Ware & Assoc Inc
3395 NE Exprwy
404-455-1621
IL Northbrook
Resource Data Systems
801 Skokie Blvd
312-564-5440
MA Wellesley Hills
Fowler Anthony & Co
20 Walnut
617-237-4201
TX Houston
Dybell/Ware & Assoc Inc
5739 Hummingbird
713-723-7579

GERMANY, WEST

5400 Koblenz
Issco Deutschland
Dietzstrasse 16
49 261 407989

JAPAN

Tokyo 150
Sony/Tektronix
Taisoebisu-Bldg
6-11; Ebisuminami-1 Shibuya-Ku
037108151

NETHERLANDS

The Hague
Repko br
58 Van Blankenburgstraat
070-608425

SWEDEN

Stockholm
Arenihus AB
Ivar Arrhenius
08 673207

INTELLIGENT SYSTEMS CORP

225 Technology Park/Atlanta
Norcross, GA 30092
404-449-5961
Contact: Dave Deans
■ Products & Services
Minicomputers
Disc drives, floppy
Data entry terminals
Graphic display terminals
Programmable terminals
Remote line printers
Video data terminals (KSR)

Branch Sales Offices:

- AL Huntsville
W A Brown Instruments Inc
7912-C Charlotte Dr
205-883-8660
- AZ Scottsdale
BFA Corp
4426 N Saddlebag Trail
602-994-5400
- CA Los Angeles
The Thorson Co
520 S Sepulveda
213-476-1241
- CA Goleta
The Thorson Co
340 S Kellogg Av
805-964-8751
- CA Irvine
The Thorson Co
18009 Sky Park Cir
714-557-4460
- CA San Diego
The Thorson Co
7841 Balboa Av
714-292-8525
- CA Los Angeles
Computers International
3540 Wilshire Blvd
213-382-1107
- CA Los Altos
Jay Stone Assoc
339 S San Antonio Rd
415-948-4563
- CA Alhambra
Thorson Co
624A N Garfield Ave
213-281-2280
- CO Denver
Par Assoc
10515 E 40th Ave
303-371-4140
- CT Goshen
J & J Assoc Inc
Box 2241
203-624-7800
- FL Ft Lauderdale
W A Brown Instruments
961 NW 53 St
305-776-4800
- FL Melbourne
W A Brown Instruments
701 Lincoln Ave
305-723-0766
- FL Orlando
W A Brown Instruments
222 Weber St
305-425-5505
- FL Tallahassee
W A Brown Instruments
1325 E Tennessee St
904-878-6642
- GA Atlanta
W A Brown Instruments
3781 NE Expwy
404-455-1035
- GA Atlanta
American Business Systems
Box 88220
404-394-9603
- GA Atlanta
ISC Middle East
Box 48541
404-325-7569
- HI Honolulu
Thorson Co
677 Ala Moana Blvd
808-524-8633
- IL Northbrook
Resource Data Systems
801 Skokie Blvd
312-564-5440
- KY Lexington
Lowry & Assoc Inc
Box 1827
606-273-3771
- LA Mandeville
W A Brown Instruments
350 N Causeway Blvd
504-626-9701
- MD Springfield
Intron Corp
7830 Backlick Rd
703-569-1502
- MA Winchester
J&J Assoc Inc
225 East St
617-729-5770
- MA Cambridge
Techexport
139 First St
617-661-9424
- MI Brighton
Lowry & Assoc Inc
8163 W Grand River
313-227-7067
- MI Grand Rapids
Lowry & Assoc Inc
3902 Costa NE
616-363-9839
- MN St Paul
Dytec North Inc
1821 University Ave
612-645-5816
- MO Grandview
Digital Systems Sales Inc
4006 E 137th Terrace
816-765-3337
- NM Albuquerque
BFA Corp
1704 Moon NE
505-292-1212
- NM Las Cruces
BFA Corp
Corner Hadley & Motel Blvd
505-524-9693
- NY Ft Lee
Technical Marketing Assoc Inc
2460 Lemoine Ave
201-224-6911
- NY N Syracuse
NACO Electronics Corp
Box 276
315-699-2651
- NY Fairport
Naco Electronics Corp
17 Port Meadow Trail
716-223-4490
- NY Utica
Naco Electronics Corp
2631 Edgewood Rd
315-732-1801
- NC Durham
W A Brown Instruments
828 Glendale Ave
919-683-1580
- OH Cleveland
Lowry & Assoc Inc
1440 Snow Rd
216-398-9200
- OH Dayton
Lowry & Assoc Inc
2194 Hewitt Ave
513-435-7684
- OR Beaverton
The Thorson Co
6700 SW 105th Ave
503-644-5900
- PA Ambler
Denco Data Equipment Corp
25 Skippack Pk
215-542-9876
- PA Pittsburgh
Lowry & Assoc Inc
Seven Parkway Ctr
412-922-5110
- SC Columbia
W A Brown Instruments
1234 St Andrews Rd
803-798-8070
- TN Oakridge
W A Brown Instruments Inc
733 Emory Valley Rd
615-482-5761
- TX Dallas
US Data Eng
14241 Proton Rd
214-661-9633
- TX Austin
US Data Engineering
8701 Shaal Creek
512-454-3579
- TX Houston
US Data Engineering
4120A Director's Row
713-681-0200
- UT Centerville
Par Assoc
1167 N Deerfield Dr
801-292-8145
- WA Bellevue
The Thorson Co
One Lake Bellevue Dr
206-455-9180
- ONTARIO, CANADA
Ottawa
Datamex
1750 Courtwood Crescent
613-224-1391
- ONTARIO, CANADA
Vancouver
Datamex Ltd
525 Seymour St
604-684-8625
- ONTARIO, CANADA
Toronto
Datamex Ltd
14 Leswyn Rd
416-787-1208
- QUEBEC, CANADA
Dorval
Datamex Ltd
785 Avenue Lajoie
514-636-9774
- AUSTRALIA
Mt Waverly, Victoria
Anderson Digital Equipment
1 Expo Court
Melbourne 543-2077
- AUSTRALIA
New South Wales 2120
Anderson Digital Equipment P/L
Box 341 Pennant Hills
(02) 848-8533

AUSTRALIA

Chermside QLD 4032
Anderson Digital Equipment P/L
Box 204
(07) 350-2611

ENGLAND

West Howe Bournemouth
Techex Ltd
58 Roundways; Elliot Rd
2016-71181

FRANCE

Rueil
Techdata Sarl
92 Avenue Albert 1er
749-47-65

ITALY

20125 Milano
E F E Srl
Via Villa Mirabello 6
02-600733

JAPAN

Tokyo
Computers International Japan
Inc
MKC Shinsen Bldg; 20-22
Shinsen-cho
03-463-9921

NEW ZEALAND

Wellington
Anderson Digital Electronics
Box 43-119, Wainuiomata
644-585/646-961

NEW ZEALAND

Christchurch
Anderson Digital Electronics
Box 25-104
796-210

SPAIN

Barcelona
Sistemas de Organizacion
Mecanizada SA; C/LOS Vergos 56,
Bigs
204-17-43

SWEDEN

Vallingby 4
Teleinstruments AB
Maltesholmsvagan 13
08-380-370

SWITZERLAND

CH-540 Baden-Dattwil
W Stolz AG
Tafernstrasse 15
057-546-55

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201.**

INTELLIGENT TERMINALS INC

One First St
Los Altos, CA 94022
415-948-7033
Contact: Donald L Johnston
■ Products & Services
Concentrators
Front-end processors
Multiplexers, statistical (intelligent)
Packet processors
Cartridge drives
Programmable terminals

Branch Sales Offices:

CA Los Altos
Casey-Johnston Inc
One First St
415-941-6892

INTERACTIVE SYSTEMS/3M

3980 Varsity Dr
Ann Arbor, MI 48104
313-973-1500
Contact: Richard McRae
■ Products & Services
Value-added carriers
Front-end processors
Line sharing units
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Inverse multiplexers
Multiplexers, statistical (intelligent)
Multiplexers, group band
Port selectors
Port sharing units
Remote network processors
Digital service units
Digitized-voice processors
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Technical control centers
DDP systems
Local network systems
Terminal interfaces
Cables, electrical prefabricated extending
Computer/communications interfaces
Data security devices, software security
modules
Selection & transfer equipment, monitor &
test switching equipment
Data communications consultants
Data communications software, distributed
data processing system vendors
Educational services
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

MI Ann Arbor
Interactive Systems/3M
3980 Varsity Dr
313-973-1500
MN St Paul
Interactive Systems/3M
Bldg 225-4NE 3M Center
612-733-4594
VA Virginia Beach
Interactive Systems/3M
5100 Hemlock Ave
804-499-1051
WA Vancouver
Interactive Systems/3M
10501 NE 22 St
206-254-1090

INTERACTIVE SYSTEMS CORP

1212 Seventh St
Santa Monica, CA 90401
213-450-8363
Contact: Dwayne Lawry
■ Products & Services
Local network systems
Word processors, communicating
Data communications software,
communications processors vendors
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

DC Washington
Interactive Systems Corp
1015 15th St NW
202-789-1155
TX Dallas
Interactive Systems Corp
4099 McEwen St

INTERDYNE CO

14761 Califa St
Van Nuys, CA 91411
213-787-6800
Contact: Colin Ball
■ Products & Services
Cartridge drives
Cassette drives
Tape drives, magnetic

INTERFACE MECHANISMS INC

4405 Russell Road
Lynnwood, WA 98036
206-743-7036
Contact: Richard R Dilling
■ Products & Services
Bar code readers
Remote line printers

Branch Sales Offices:

AL Huntsville
W A Brown Instruments
Box 4560
205-883-8660
AR Mesa
Data Systems Marketing
2256 W Catalina Ave
602-833-0061
CA Costa Mesa
Data Systems Marketing
2950 Airway D-S
714-540-2312
CA Los Angeles
Data Systems Marketing
6820 Latjire #211
213-641-2050
CA San Diego
Data Systems Marketing
5710 Ruffin Rd
714-560-9222
CA Mt View
Data Systems Marketing
2680 Bayshore Frontage Rd #810
415-941-0240
CA San Francisco
Data Systems Marketing
454 Wellesley
415-383-5962
CA Palo Alto
Ausint Inc
151 University Ave
415-326-0564
CO Denver
Data Systems Marketing
955 Bannock St
303-573-5133
CO Colorado Springs
Data Systems Marketing
1120 N Circle Dr
303-471-1563
FL Orlando
W A Brown Instruments
Box 513
305-425-5505
FL Ft Lauderdale
W A Brown Instruments
961 NW 53 St
305-776-4800
FL Melbourne
W A Brown Instruments
Box 1406
305-723-0766

FL Tallahassee
W A Brown Instruments
1325 E Tennessee St
904-878-6642

HI Atlanta
W A Brown Instruments
3781 NE Expwy
404-455-1035

IL Arlington Hghts
Dytec/Central Inc
315 W University Dr
312-394-3380

IN Indianapolis
Dytec/Central Inc
25 Beachway Dr
317-247-1316

KS Overland Park
Ramsey Assoc
6900 80th St
913-649-6996

LA Mandeville
W A Brown Instruments
Box 786
504-626-9701

LA LaFayette
Comspec Inc
403 Mecca Dr
318-232-6275

MD Rockville
EMA Inc
11716 Parklawn Dr
301-881-5300

MA Cochituate
Ray Stevens
34 Fuller Rd
617-653-8655

MI Madison Heights
WKM Associates
345 W Girard
313-588-2300

MN St Paul
Dytec/North Inc
1821 Univ Ave
612-645-5816

MO St Louis
Ramsey Assoc
1901 Congressional Dr
314-569-1406

NM Albuquerque
Data Systems Marketing
3629 Wyoming NE #111
505-294-5790

NC Durham
W A Brown Instruments
828 Glendale Ave
919-682-2383

OH Cleveland
WKM Associates
16141 Puritas Ave
216-267-0445

OH Dayton
WKM Associates
7913 S Suburban Rd
513-434-7500

OK Tulsa
Comspec Inc
Box 7597
918-743-6892

OR Hillsboro
Data Systems Marketing
910 NW Brookwood
503-640-4883

OR Bend
Data Systems Marketing
Box 6032
503-388-3612

PA Plymouth Meeting
EMA Inc
649 Germantown Pike
215-248-5050

PA Pittsburgh
WKM Associates
90 Clairton Blvd
412-892-2953

SC Columbia
W A Brown Instruments
1234 St Andrews Rd
803-798-8070

TN Oak Ridge
W A Brown Instruments
733 Emory Valley Rd
615-482-5761

TX Houston
Comspec Inc
Box 79438
713-461-4487

TX Richardson
Comspec Inc
Box 693
214-234-4137

TX Austin
Comspec Inc
Box 15911
512-837-3881

UT Salt Lake City
Data Systems Marketing
1864 S State St #160
801-487-8281

VA Richmond
EMA Inc
2309 Triton Dr
804-320-8801

WA
Data Systems Marketing
10412 Beardslee Blvd #2
206-487-3571

WA Spokane
Data Systems Marketing
West 612 2nd St
509-747-6216

QUEBEC, CANADA
Rexdale
Ahearn and Soper Ltd
31 Enterprise Rd
416-245-4848

AUSTRALIA
Victoria
Anderson Digital Equipment
1 Expo Ct Mt Waverly
03-543-2076

BELGIUM
Brussels
C N Rood SA
Pl DeJamblinne DeMeux 37
02-735.21.35

DENMARK
Holte
Iversen & Martens A/S
Hanne Nielsens Vej 10
02.42.47.11

ENGLAND
Reading
Sintrom Ellinor Ltd
14 Arkwright Rd
0734 85464

FINLAND
Kauniainen
Oy Findip AB
Teollisuustie 7
90 502255

FRANCE
Asnieres
Metrologie
4 av Laurent-Cely
1 791.44.44

GERMANY, WEST
Eching b Munchen
Kortron Elektronik GMBH
Breslauer Str 2
089-31901-288

ITALY

Milano
SEGI
Via Timavo 12
02 60.73.184

JAPAN

Osaka
Matsushita Electric
530-91 Osaka
06-204-5588

KOREA REP (REP)

Seoul
Korea Computer Center
8-61 Galwol-Dong
793-7789

NETHERLANDS

Rijswijk
CN Rood BV
Cort VD Lindenstraat 11-13
070-996360

NORWAY

Oslo
Morgenstjerne & Co A/S
Konghellegate 3
02 356110

SINGAPORE

Singapore
Total Computer Systems PTE Ltd
20/23F Blk 12 50 Kallang Bahru
2934401

SOUTH AFRICA

Johannesburg
SACO Systems Pty Ltd
Box 46348/Orange Grove
011-291-861

SWEDEN

Vallingby
Teleinstrument AB
Maltesholmssvagen 138
08 380370

TAIWAN

Taipei
C C Tsay Assoc Inc
4 Fl 12 Lane 134
02-393-5760

INTERFACE SYSTEMS INC

462 Jackson Plaza
Ann Arbor, MI 48103
313-769-5900
Contact: Clyde L Kloack
■ Products & Services
Audio response units
Portable data entry terminals
Remote line printers
Computer/communications interfaces

INTERMETRICS INC

701 Concord Ave
Cambridge, MA 02138
617-661-1840
Contact: Glen Langston
■ Products & Services
Selection & transfer equipment, monitor &
test switching equipment
Data communications consultants
Data communications software, independent
software houses

INTERNATIONAL DATA SCIENCES INC

7 Wellington Road
Lincoln, RI 02865
401-333-6200
Contact: Raymond B Sepe
■ Products & Services
Modem sharing units
Port sharing units
Line drivers
Modems, limited distance

Modem eliminators
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
Technical control centers
Cables, electrical prefabricated extending
Data jacks and plugs
Error controllers
Selection & transfer equipment, monitor & test switching equipment
Selection & transfer equipment, patching equipment
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

AK Anchorage
Transalaska Data Systems
200 Center Ct
907-276-5616

AZ Phoenix
PLS Assoc Inc
4001 N 31st Ave
602-279-1531

CA Anaheim
Moxon Electronics
1970 S Santa Crus St
714-635-7600

DC Silver Spring
Terminal Networks Inc
118 Eldrid Dr
301-622-3535

FL Orlando
Col-Ins-Co Inc
1313 44th St
305-423-7615

FL Hallandale
Emec Inc
2350 S 30 Av
305-457-9400

IL Rolling Meadows
SEA
1225 Carnegie St
312-255-4820

MA Winchester
J & J Assoc
225 East St
617-729-5770

MO St Johns
Midwest Marketing
3606 Woodson Rd
314-426-2500

NJ Livingston
Star Technical Sales Co
283 E North Fld Rd
201-992-7827

NY East Syracuse
Ossman Instruments Inc
6666 Old Collamer Rd
315-437-6666

OH Cleveland
Lowry & Associates Inc
1440 Snow Rd
216-389-9200

PA King of Prussia
J E Cuesta & Co Inc
570 W DeKalb Pike
215-265-5800

TX Houston
Data Aids Assoc
1440 N Loop
713-862-6685

WA Seattle
Rush S Drake Assoc Inc
11524 15th Ave NE
206-763-2755

BRITISH COLUMBIA, CANADA

North Vancouver
National Electro Lab Ltd
1536 Columbia St
604-985-0511

ONTARIO, CANADA

Toronto ON
Allcom Data Ltd
2175 Sheppard Ave
416-492-9231

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INTERSIL INC

10710 N Tantau Ave
Cupertino, CA 95014
408-996-5000
Contact: Tony Macaluso

■ Products & Services
Minicomputers
Add-on main memory

Branch Sales Offices:

CA Sunnyvale
Intersil
1272 Forgewood Ave
408-744-0618

CA Long Beach
Intersil
400 Oceangate
213-436-9261

CO Aurora
Intersil
5 Parker Pl
303-750-7004

FL Hollywood
Intersil
2700 N 29 Ave
305-920-2442

IL Hinsdale
Intersil
201 Ogden Ave
312-986-5303

MA Lexington
Intersil
2 Militia Dr
617-861-6220

MN Minneapolis
Intersil
6550 York Ave S
612-925-1844

NJ Englewood Cliffs
Intersil
560 Sylvan Ave
201-567-5585

OH Miamisburg
Intersil
228 Byers Rd
513-866-7328

TX Dallas
Intersil
12820 Hillcrest Dr
214-387-0539

ONTARIO, CANADA

Brampton
Intersil
338 Queen St E
416-457-1014

INTERSTATE ELECTRONICS CORP

1001 E Ball Road Box 3117
Anaheim, CA 92803
714-635-7210

Contact: Dan L Cahill
■ Products & Services
Digitized-voice processors
Graphic display terminals
Programmable terminals

Remote job entry terminals
Telescriber
Pulse and signal regenerators
Voice digitizers

Branch Sales Offices:

GA Atlanta
Interstate Elect Corp
2700 Cumberland Pkwy
404-432-2311

IL Schaumburg
Interstate Elect Corp
1375 Remington Rd
312-843-7232

OH Dayton
Interstate Elect Corp
333 W First St
513-461-2236

TX Houston
Interstate Elect Corp
9525 Katy
713-932-9035

VA Arlington
Interstate Elect Corp
1745 Jefferson Davis Hwy
703-920-8990

VA Arlington
Interstate Elect Corp
1901 N Ft Meyer Dr
703-243-6660

INTERTEC DATA SYSTEMS CORPORATION

2300 Broad River Rd
Columbia, SC 29210
803-798-9100

Contact: Ron L Wells
■ Products & Services
DDP systems
Disc drives, large
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)

INTERTEL INC

Six Shattuck Rd
Andover, MA 01810
617-681-0600

Advertising page 87

Contact: John Shepard

■ Products & Services

Line sharing units
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Port selectors
Port sharing units
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
MIL 188C adapters
Network management centers
Technical control centers
Automatic answering units
Computer/communications interfaces
Data access arrangement devices
Selection & transfer equipment, monitor & test switching equipment
Selection & transfer equipment, patching equipment
Selection & transfer equipment, reconfiguration equipment

Switches, data communications, automatic
Switches, data communications, manual
Voice adapters

Branch Sales Offices:

CA San Francisco
Intertel Inc
681 Market St
415-543-3800

CA El Segundo
Intertel Inc
999 Sepulveda Blvd
213-640-1446

FL Miami
Intertel Inc
2050 Coral Way
305-858-6420

GA Atlanta
Intertel Inc
14 Perimeter Center E
404-394-0434

IL Chicago
Intertel Inc
175 W Jackson Blvd
312-663-5900

MD Rockville
Intertel Inc
11428 Rockville Pike
301-770-2272

MI Birmingham
Intertel Inc
725 S Adams Rd
313-644-2777

MN Minneapolis
Intertel Inc
6750 France Ave S
612-929-9511

MO Creve Coeur
Intertel Inc
11500 Olive St Rd
314-569-3390

NJ Secaucus
Intertel Inc
One Harmon Pl
201-348-6666

NC Charlotte
Intertel Inc
501 Archdale Dr
704-523-4101

OH Columbus
Intertel Inc
100 E Wilson Bridge Rd
614-885-5312

PA Warminster
Intertel Inc
320 W Street Rd
215-674-3990

TX Dallas
Intertel Inc
1545 W Mockingbird La
214-688-0797

TX Houston
Intertel Inc
10333 Northwest Frwy
713-682-1118

ONTARIO, CANADA
Markham
Signatel Ltd
89 Telson Rd
416-495-9229

ENGLAND
London
Data Logic Ltd
29 Marylebone Rd
01-486-7288

NETHERLANDS
Uden
Stock Control International
Klavecimbellaan 3
04132-65551

ITT BUSINESS SYS & COMM GRP

410 Park Ave
New York, NY 10022
212-753-3090

■ Products & Services
Message switchers
Teleprinters, impact
Teletypewriters

Branch Sales Offices:

CA Los Angeles
Telex Terminals
7046 Hollywood Blvd
213-874-0673

CO Thornton
W C Geddings Co
2826 E 117 Way
303-452-2572

FL St Petersburg
EMS Data Terminals
4201 14 Way NE

MI White Plains
Communication Equipment Brokers
Inc
77 Tarrytown Rd
914-428-8188

TX Dallas
Gragg & Assoc Inc
13999 Goldmark
214-234-5007

ITT COURIER TERMINAL SYSTEMS
INC

1515 W 14th St
Tempe, AZ 85281
602-275-7555

Contact: A W Pirtle
■ Products & Services
Data entry terminals
Interactive terminals
Terminal controllers
Video data terminals (KSR)

Branch Sales Offices:

AZ Phoenix
ITT Courier Terminal Systems Inc
2406 24th St
602-267-9191

CA Century City
ITT Courier Terminal Systems Inc
10100 Santa Monica Blvd
213-879-1631

CA Orange
ITT Courier Terminal Systems Inc
North Tower; 500 S Main St
714-547-8202

CA Oakland
ITT Courier Terminal Systems Inc
1221 Broadway
415-451-9411

CO Denver
ITT Courier Terminal Systems Inc
2480 W 22nd St
303-433-8607

CT Glastonbury
ITT Courier Terminal Systems Inc
76 Eastern Blvd
203-633-6721

FL Coral Gables
ITT Courier Terminal Systems Inc
201 Sevilla Av
305-442-2645

GA Atlanta
ITT Courier Terminal Systems Inc
2260 N Druid Hills NE
404-329-9472

IL Oak Brook
ITT Courier Terminal Systems Inc
2301 W 22 St
312-920-2770

IN Indianapolis
ITT Courier Terminal Systems Inc
539 Turtle Creek
317-783-2974

IA Davenport I
ITT Courier Terminal Systems Inc
3719 Bridge Ave
319-332-6586

MD Lanham
ITT Courier Terminal Systems Inc
9600 George Palmer Hwy
301-459-3000

MA Waltham
ITT Courier Terminal Systems Inc
275 Wyman St
617-890-9595

MI Southfield
ITT Courier Terminal Systems Inc
27777 Franklin Rd
313-358-3090

MN Eden Prairie
ITT Courier Terminal Systems Inc
7525 Mitchell Rd
612-941-4124

MO St Louis
ITT Courier Terminal Systems Inc
1810 Craig Rd
314-434-3199

MO Kansas City
ITT Courier Terminal Systems Inc
1575 Universal Ave
816-483-6530

NJ Edison
ITT Courier Terminal Systems Inc
20 Mayfield Ave
201-225-3232

NY New York
ITT Courier Terminal Systems Inc
745 5 Ave
212-751-0500

NY Rochester
ITT Courier Terminal Systems Inc
3000 Winton Rd S
716-461-5700

NC Charlotte
ITT Courier Terminal Systems Inc
5 Woodlawn Green
704-523-2401

OH Cincinnati
ITT Courier Terminal Systems Inc
4015 Executive Park Dr
513-563-8050

OH Independence
ITT Courier Terminal Systems Inc
5000 Rockside Rd
216-447-0455

OK Oklahoma City
ITT Courier Terminal Systems Inc
909 S Meridian
405-949-0077

PA King of Prussia
ITT Courier Terminal Systems Inc
1020 Valley Forge Plaza
215-265-7620

PA Pittsburgh
ITT Courier Terminal Systems Inc
Robinson Plaza 2
412-923-2446

TX Dallas
ITT Courier Terminal Systems Inc
4141 Blue Lake Cir
214-233-9002

TX Houston
ITT Courier Terminal Systems Inc
3131 Briarpark Dr
713-780-0309

TX Austin
ITT Courier Terminal Systems Inc
512 E Riverside Dr
512-447-1184

WA Seattle
ITT Courier Terminal Systems Inc
2121 4th Ave
206-382-9187

WI Brookfield
ITT Courier Terminal Systems Inc
15850 W Bluemound Rd
414-782-0776

BRITISH COLUMBIA, CANADA
Vancouver
ITT Courier Terminal Systems
1107-750 W Pender St
604-682-2751

ONTARIO, CANADA
Mississauga
ITT Courier Terminal Systems
6889 Rexwood Rd
416-676-9930

ONTARIO, CANADA
Ottawa
ITT Courier Terminal Systems
112 Kent St
613-236-5526

QUEBEC, CANADA
St Laurent
ITT Courier Terminal Systems Inc
7575 Trans-Canada Hwy
514-337-4841

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

ITT DOMESTIC TRANSMISSION SYSTEMS INC

2 Broadway
New York, NY 10004
797-4517
Contact: John Malone
■ Products & Services
Facsimile-service carriers
Message (including telegraph) carriers
Packet-switching carriers

ITT-ELECTRO/OPTICAL

7635 Plantation Rd
Roanoke, VA 24019
703-563-0371
Contact: W McCreary
■ Products & Services
Lightwave (fiber optic) systems
Cables, lightwave (optical fiber)

ITT WORLD COMMUNICATIONS INC

67 Broad St
New York, NY 10004
800-424-1170
Contact: Jon Reese
■ Products & Services
Facsimile-service carriers
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Satellite carriers
Value-added carriers

Branch Sales Offices:

CA San Francisco
ITT Worldcom
450 Mission St
415-421-1303
CA Los Angeles
ITT Worldcom
1200 Wilshire Blvd
213-481-1470
DC Washington DC
ITT Worldcom
1707 L St NW
202-296-6426

IL Chicago
ITT Worldcom
200 W Monroe
312-263-4712

MI Southfield
ITT Worldcom
4000 Town Center
313-358-1860

NY New York
ITT Worldcom
67 Broad
212-797-3300

PA Ft Washington
ITT Worldcom
455 Pennsylvania Ave
215-628-9202

TX Houston
ITT Worldcom
2190 N Loop W
713-681-1814

CD JOHNSON/ASSOC LTD

56 Sparks St #100
Ottawa, ON K1P 5A9
613-238-6069
Contact: Charles Johnson
■ Products & Services
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Remote line printers
Teleprinters, impact
Teleprinters, non-impact
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Automatic calling units

JOHNSON SYSTEMS INC

7923 Jones Branch Dr
McLean, VA 22102
703-821-1700
Contact: Mark Stoll
■ Products & Services
Data communications software, independent
software houses

Branch Sales Offices:

TX Dallas
Johnson Systems Inc
2880 LBJ Frwy

ARGENTINA

1004-Buenos Aires
SCI-Argentina
SAN MARTIN 881
31-2019

AUSTRALIA

Sydney
Semiconductor Systems Pty Ltd
8 Spring St
2413401

BRAZIL

Rio de Janeiro
SCI-Brazil
Rua Jardim Botânico 635
286-0202

ENGLAND

Watford
Johnson Systems UK
10 Station Rd
011 44 923 46255

FINLAND

Helsinki
Oy Suomen Data Analys AB
Kaivokatu 10 B
90 627252

FRANCE

Paris
Carus France
30 Rue du Chateau
747 72 17

GERMANY, WEST

4000 Dusseldorf
Johnson Systems GmbH
Hunsrueckenstrasse 22
211 32 09 95

ITALY

Milano
Selestasi Sistemi SPA
Via meravigli 16
874246

JAPAN

Tokyo
K K Ashisuto
3-4-1 Nishi Shimbashi
03 437 0921

SOUTH AFRICA

Marshalltown
George Kendall Pty Ltd
Box 61182
843-2747

SWEDEN

Stockholm
Dataanalys (Scandinavia) AB
Skeppsbron 18
08 21 84 10

SWITZERLAND

Lugano
Sadira SA
Piazza Riscossa 16

KAPUSI LABORATORIES

2121 S El Camino Real Ste 615
San Mateo, CA 94403
415-573-5475

Contact: John Kapusi

■ Products & Services
Modem sharing units
Line drivers
Modems, limited distance
Error rate detectors
Power supplies
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic
Data communications consultants

Branch Sales Offices:

ALBERTA, CANADA

Edmonton
Ogtel International Ltd
202, 10116 105 Ave
403-425-8270

ONTARIO, CANADA

Ottawa
Comtest Communications Products
Ltd
374 Britannia Rd
613-828-5236

FRANCE

92310 Sevres
Tekelec Airtronic
Cite de Bruyeres; Rue Carle
Vernet
1 027-75-35

GERMANY, WEST

8000 Munchen 2
Tekelec Airtronic GmbH
Nussbaumstr 4
089-594621

GREECE

Athens
ACS Prime Computer
7 Dion Areopagitou Str

KOREA REP (REP)

Seoul
Buhae Corp
36-1 Namdaemoon-Ro;5Ka, Jung-Ku
22,4404, 604-2261

NEW ZEALAND

Wellington
Philips Electrical Industries of
NZ Ltd
181-195 Wakefield St
858-858

SWEDEN

Solna
Svea Data Comm
Box 3004
08-82-03 35

SWITZERLAND

Geneva
Interep SA
4 cours des Bastions
022/20 83 46

TAIWAN

Taipei
Sun Moon Star Ent Co Ltd
Box 3669
7819495

KAUFMAN RESEARCH MFG INC

14100 Donelson Pl
Los Altos Hills, CA 94022
415-948-3777
Contact: Charles J Chapin
■ Products & Services
Concentrators
Front-end processors
Message switchers
Packet processors
Remote network processors
Protocol converters
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, independent
software houses
Branch Sales Offices:

AUSTRIA

Austria
Neve Organisation maschinen,
GMBH
Untere Donaustasse 13-15;1020
Wien
02-2224-84-14

KENNEDY CO

1600 Shamrock Ave
Monrovia, CA 91016
213-357-8831
Contact: R E Bartholonev
■ Products & Services
Cartridge drives
Tape drives, magnetic

KEYLINE INC

3260 Scott Blvd
Santa Clara, CA 95051
408-246-6830
Contact: Mark Kallin
■ Products & Services
Cassettes
Discs, floppy
Tape, magnetic

Branch Sales Offices:

CA

Los Alamitos
Keyline Inc
3532 Katella Ave
213-596-3522

NY

Commack
Keyline Inc
85 Austin Blvd
516-543-3223

TX

Dallas
Keyline Inc
13101 Preston Rd
214-233-2628

KEYTEK INSTRUMENT CORP

12 Cambridge St
Burlington, MA 01803
617-272-5170
Contact: Michael Hopkins
■ Products & Services
Electrical-parameters test equipment
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

CA

Santa Clara
Mollard Mktg
3350 Scott Blvd
408-727-2050

CA

Thousand Oaks
Max Shovlowsky
311 Corrine Hill Ct
805-498-6547

CT

Mt Carmel
Scientific Devices CT
3074 Whitney Ave
203-248-9361

GA

Atlanta
Kemp Instruments
5725 Buford Hwy NE
404-452-5080

IA

LaGrange
PVA Co
521 S LaGrange Rd
312-579-9300

MA

Waltham
Scientific Devices NE
181 West St
617-890-2252

MN

Minneapolis
Heimann Co
5603 Lyndale Ave
612-861-6051

NI

Englewood
Scientific Devices East
115 Grand Ave
201-871-3916

NC

Winston Salem
Radco
614 First Union Natl Bank Bldg
919-722-9671

OH

Columbus
Measurement Instruments
2840 Fisher Rd
614-274-1144

PA

Philadelphia
Technical Instrument Sales
523 Bethlehem Pk
215-836-2222

TX

Dallas
True Technology
Box 12688
214-691-7870

VA

Springfield
Scientific Devices DC
7643 Fullerton Rd
703-451-6500

WA

Seattle
Eicher Richards
2727 NE Blakeley St
206-523-7888

KIDDE BELLEVILLE/DIV OF KIDDE INC

675 Main St
Belleville, NJ 07109
201-759-5000
Contact: Lee Warner
■ Products & Services
Fire detection/protection equipment

KMW SYSTEMS INC

8307 Highway 71W
Austin, TX 78735
Advertising page 145
Contact: Fred Klingensmith
■ Products & Services
Protocol converters

Branch Sales Offices:

AZ

Phoenix
Peripherals Inc
6525 N 15 Ave
601-274-8999

CA

Mission Viejo
Western Data Corporation
26701 Caceres Cir
714-768-3345

CO

Littleton
Davis Associates
709 W Littleton Blvd
303-795-1400

IL

Park Ridge
Ad Tech Inc
701 South Lincoln Ave
312-692-7320

MA

N Easton
Heather Associates
Box 369
617-583-7698

NJ

Fort Lee
Technical Marketing Associates
2460 Lemoine Ave
201-244-6911

OH

Ohio
Koepf Associates
Chagrin Falls
216-247-5129

TX

Dallas
SCI Sales Inc
13771 N Central Expwy
214-234-8072

TX

Houston
SCI Sales Inc
1199 Nasa Rd 1
713-488-3728

WA

Bellevue
Showalter Instruments Inc
1521-130th NE
206-455-4922

ONTARIO, CANADA

Scarborough
Associated Test Equipment Ltd
3530 Pharmacy Ave
416-497-2208

AUSTRALIA

Artarmon
Datamatic Ltd
60/64 Dickson Ave
43 3333

KURTA CORP

206 S River Rd
Tempe, AZ 85281
602-968-8709
Contact: Russ Temple

LAMBDA ELECTRONICS

515 Broad Hollow Rd
Melville, NY 11747
516-694-4200
Contact: Barry Chenes
■ Products & Services
Electrical-parameters test equipment
Uninterruptible power supplies, line
correctors, etc

LANTOR INC

8055 Manchester Ave
Playa Del Rey, CA 90291
213-821-0642
Contact: Victor A Jauch

■ Products & Services

Minicomputers
Acoustic couplers
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape punch/reader, paper
Programmable terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating

LAWRENCE PACKAGING SUPPLY CORP

113 North 13 St
Newark, NJ 07107
201-485-4400
Contact: Bruce Thiel
■ Products & Services
Paper for terminals
Ribbons and supplies for terminals and printers
Used equipment

Branch Sales Offices:

CA City of Commerce
Bob Vorisek
6823 Watcher St
213-722-2033
IN Brazil
Don Eyster
206 S Walnut St
812-448-2641
NJ Newark
Robert Downing
113 N 13 St
201-485-4400

LEAR SIEGLER INC/DATA PRODUCTS

714 N Brookhurst
Anaheim, CA 92803
714-774-1010
Contact: Bob Wolkowicz
■ Products & Services
Audio response units
Data entry terminals
Graphic display terminals
Programmable terminals
Interactive terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Anaheim
Lear Siegler Inc
714 N Brookhurst
714-774-1010
CA San Jose
Lear Siegler Inc
800 Charcot
408-263-0506
IL Elmhurst
Lear Siegler Inc
970 N Oaklawn Ave
312-279-5250
MD Hyattsville
Lear Siegler Inc
7515 Annapolis Rd
301-459-1826
PA Treviso
Lear Siegler Inc
Two Neshaminy Interplex
215-245-1520

TX Houston
Lear Siegler Inc
8401 Westheimer Rd
713-780-2585

To find local sales offices of companies, turn to **Vendor Directory, page 301.**

LEAR SIEGLER INC SIERRA ELECTRONIC DIV

3885 Bohannon Dr
Menlo Park, CA 94025
415-321-5374
Contact: F Jack Gorry
■ Products & Services
Electrical-parameters test equipment
Error rate detectors
Response-time monitors

Branch Sales Offices:

AL Birmingham
Lear Siegler-Sierra Elect Div
3218 Sharpsburg Cir
205-956-1434
AZ Scottsdale
Lear Siegler-Sierra Elect Div
8702 E Highland Av
602-994-8253
CO Aurora
Lear Siegler-Sierra Elect Div
3855 S Fraser St
303-693-3462
FL Jacksonville
Lear Siegler-Sierra Elect Div
13751 Mandarin Rd
904-268-7828
GA Conyers
Lear Siegler-Sierra Elect Div
1790 Holmes Dr
404-483-1518
MO St Louis
Lear Siegler-Sierra Elect Div
12853 Foxspur Ct
314-741-7411
NC Burlington
Lear Siegler-Sierra Elect Div
Box 2448
919-584-5492
NC Raleigh
Lear Siegler-Sierra Elect Div
Box 31544
919-782-6143
PA Dallas
Lear Siegler-Sierra Elect Div
RD #5 Box 378-4
717-675-4882
WA Kirkland
Lear Siegler-Sierra Elect Div
8228 NE 115th Way
206-821-8855

LEASAMETRIC

1164 Triton Dr
Foster City, CA 94404
415-574-4441
Contact: David Sobo
■ Products & Services
Concentrators
Line sharing units
Modem sharing units
Inverse multiplexers
Multiplexers, statistical (intelligent)
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)

Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modem eliminators
Data content monitors
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
RTS emulator
DDP systems
Disc drives, floppy
Batch terminals
Data entry terminals
Digital plotters
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Automatic answering units
Automatic calling units
Code converters
Computer/communications interfaces
Power supplies
Lease and resale organizations
Used equipment

Branch Sales Offices:

AZ Phoenix
Leasametric
2810 S 24th St
602-258-1225
CA Anaheim
Leasametric
1630-A S Sunkist Dr
714-634-9525
CA Culver City
Leasametric
5780 Uplander Way
213-768-4200
CA San Diego
Leasametric
7292 Opportunity Rd
714-565-7475
CA Foster City
Leasametric
1164 Triton Dr
415-574-4441
CO Denver
Leasametric
7100 Broadway
303-429-7900
FL Orlando
Leasametric
7665 Currency Dr
305-857-3500
GA Norcross
Leasametric
6050 McDonough Dr
404-449-6123
IL Elk Grove Village
Leasametric
2761 Katherine Way
312-595-2700
MD Gaithersburg
Leasametric
9204 Gaither Rd
301-948-9700

- MA Woburn
Leasametric
24 Cummings Pk
617-935-7780
- MN Burnsville
Leasametric
1137 Riverwood Dr
612-894-6060
- NJ Allendale
Leasametric
2 Pearl Ct
201-825-9000
- NY Plainview
Leasametric
84 Newtown Plaza
516-293-5881
- NY New York
Leasametric
2 Penn Plaza 9th Fl
212-594-6900
- NY Syracuse
Leasametric
1 Northern Concourse
315-455-5611
- OH Dayton
Leasametric
5653 Webster St
513-398-1707
- PA Folcroft
Leasametric
701 Ashland Ave
215-583-2000
- TX Houston
Leasametric
10400 West Office Dr
713-977-5990
- TX Dallas
Leasametric
13721 Omega Rd
214-661-9193
- WA Redmond
Leasametric
2529 152 Ave NE
206-883-6510
- ONTARIO, CANADA
Mississauga
Leasametric
7040 Torbram Rd
416-676-1897
- LEXCOM SYSTEMS INC
2104 W Peoria Ave
Phoenix, AZ 85029
602-944-1543
Contact: Terry Siegrist
■ Products & Services
Concentrators
Front-end processors
- LEXICON INC
60 Turner St
Waltham, MA 02154
617-891-6790
Contact: Jack Letscher
■ Products & Services
Graphic display terminals
Programmable terminals
Terminal controllers
Video data terminals (RO)
Branch Sales Offices:
CA Sunnyvale
Inter-Link Systems
580 Weddell Dr
408-744-1930
CA Palos Verdes
Edwards Assoc
608 Silver Spur Rd
213-541-2600
- IN Munster
Bexdata Ltd
8224 Calumet Ave
312-221-1411
- MA Needham
Eastmark
10 Kearney Rd
617-449-0050
- LEXIDATA CORP
37 North Avenue
Burlington, MA 01803
617-273-2700
Contact: Carole Swan
■ Products & Services
Graphic display terminals
- LEXITRON CORP
9600 De Soto Ave
Chatsworth, CA 91311
213-882-5040
Contact: Roger Fisher
■ Products & Services
Word recognition units
Word processors, communicating
Branch Sales Offices:
AK Juneau
Capital Office Supply
174 S Franklin St
907-586-2830
AZ Phoenix
Lexitron Corp
201 N Central Ave
602-271-0406
AR Little Rock
Automated Business Systems
6701 W Twelfth St
501-663-6304
CA Los Angeles
Lexitron Corp
3550 Wilshire Blvd
213-487-3191
CA Sacramento
Lexitron Corp
1540 Riverpark Dr
916-929-2074
CA San Diego
Lexitron Corp
600 B St
714-239-5177
CA San Francisco
Lexitron Corp
One Maritime Plaza
415-781-2450
CA Santa Clara
Lexitron Corp
2540 Mission College Blvd
408-988-8732
CA Santa Ana
Lexitron Corp
1633 E Fourth St
714-547-9684
CO Colorado Springs
Automated Business Systems
1235 Lake Ave
303-576-8282
CO Denver
Automated Business Systems
55 W Fifth Ave
303-825-1348
FL Tampa
American Business Systems
5123 Nebraska Ave
813-238-9564
GA Atlanta
Lexitron Corp
OMNI International S
404-525-7426
- ID Boise
Hubco Data Products Corp
152 S Cole
208-377-2320
- IL Chicago
Lexitron Corp
180 N La Salle St
312-263-0930
IL Des Plaines
Lexitron Corp
999 E Touhy Ave
312-263-0930
KS Kansas City
Brelsford Office Systems Inc
1118 N Seventh St
913-321-2662
LA Baton Rouge
EWA Corp
1885 Wooddale Blvd
504-927-9070
MD Baltimore
Lexitron Corp
201 N Charles St
301-244-0455
MA Boston
Lexitron Corp
One Faneuil Hall Marketplace
617-523-1061
MI Detroit
IBEC Inc
27380 W Nine Mile Rd
313-357-2002
MN Minneapolis
McNallan's Office Products
4074 W Broadway
612-535-2392
MO St Louis
Automated Typing Systems Inc
1790 S Brentwood Blvd
314-962-9002
MT Helena
Capital Office Equipment Inc
323 N Last Chance Gulch
406-442-3480
NJ East Orange
Lexitron Corp
60 Evergreen Pl
201-678-4965
NM Albuquerque
Total Business Systems
4801 Indian School Rd NE
505-265-3511
NM Gallup
Stevens & Heights CPA
101 W Aztec
505-722-4433
NM Roswell
Computer Solutions
500 N Main St
505-622-6910
NY New York
Lexitron Corp
600 Third Ave
212-986-9220
OH Cincinnati
Lexitron Corp
10810 Indeco Ct
513-984-6482
OH Columbus
Lexitron Corp
6530 Singletree Dr
614-436-1000
OK Oklahoma City
Automated Business Systems
2919 United Founders Blvd
405-848-4863
OK Tulsa
Automated Business Systems
4949 E 68 St
918-494-4731

OR Eugene
National Photocopy Corp
3629 Franklin Blvd
503-747-0123

OR Portland
CTR Business Systems
825 SW 14 St
503-227-2414

PA Philadelphia
Lexitron Corp
1845 Walnut St
215-567-6820

TX Austin
Lexitron Corp
8701 Shoal Creek Rd
512-454-5633

TX Dallas
Lexitron Corp
10300 N Central Expwy
214-696-3384

TX Houston
Lexitron Corp
7171 Harwin
713-974-4141

TX San Antonio
Lexitron Corp
110 Avenue E
512-223-3004

UT Murray
Hubco Data Products Corp
5248 S Pinemont
801-262-3457

VA Arlington
Lexitron Corp
1700 N Moore St
703-522-6773

WA Redmond
Lexitron Corp
2121 4th Ave
206-382-9110

WA Spokane
ABC Office Products
East 7322 Bdwy
509-922-4600

WI Brookfield
Lexitron Corp
200 Executive Dr
414-784-7711

WI Oshkosh
Oshkosh Office Supply Co
923 S Main St
414-235-8200

Want to receive announcements of new products?
Turn to **UpDate Service Card, page 201.**

LINKABIT CORPORATION

A MA/COM COMPANY

10453 Roselle St
San Diego, CA 92121
714-453-7007
Contact: Katherine S Torres
■ Products & Services
Multiplexers, frequency division
Multiplexers, time division
Packet processors
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Error rate detectors
Data compression devices
Data security devices, encoder/decoders
Branch Sales Offices:
DC Washington
Don Marcopulos

MA Boston
Dick Binder

LIVERMORE DATA SYSTEMS INC

2050 Research Dr
Livermore, CA 94550
415-447-2252
Contact: Herbert L. Weiss
■ Products & Services
Port selectors
Acoustic couplers
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Cables, electrical prefabricated extending

LOGICAL MACHINE CORPORATION

1294 Hammerwood Ave
Sunnyvale, CA 94086
408-744-1290
Contact: Barry Turner
■ Products & Services
Minicomputers
DDP systems
Local network systems
Database processors
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Maintenance organizations

Branch Sales Offices:

OH Columbus
Logical Machine Corp
2700 E Dublin-Granville Rd
614-890-8300

LORAIN PRODUCTS COPORATION

1122 F St
Lorain, OH 44052
216-288-1122
Contact: Carl Berg
■ Products & Services
Power supplies
Uninterruptible power supplies, line correctors, etc

Branch Sales Offices:

CA Mountain View
DSM
2564 Fairbrook Dr
415-968-0542

IL Chicago
DSM
245 Roosevelt Rd
312-231-5775

NE Omaha
DSM
14727 Arbor St
402-330-2754

NV Las Vegas
DSM
3025 La Canada
702-733-0936

NH Merrimack
DSM
Box 1137
603-429-0935

NC High Point
DSM
3436 Imperial Dr
919-869-3436

PA Philadelphia
DSM
1633 Conlyn St
215-276-8282

TN Gallatin
DSM
254 Hickory Harbor Dr
615-244-2800

TX Arlington
DSM
722 N Great SW Pkwy
817-640-1134

LORLIN INDUSTRIES INC

Precision Rd
Danbury, CT 06810
203-744-0096
Contact: John Seacord
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

CA Sunnyvale
Lorlin Industries Inc
1233 Midas Way
408-733-3010

TX Dallas
Lorlin Industries Inc
13531 N Central Expwy
214-690-8914

LUNDY ELECTRONICS & SYSTEMS INC

One Robert Ln
Glen Head, NY 11545
516-671-9000
Contact: Donald Casadonte
■ Products & Services
DDP systems
Graphic display terminals
Programmable terminals
Interactive terminals

Branch Sales Offices:

CA Los Angeles
Lundy Electronics & Systems Inc
1411 W Olympic Blvd
213-487-4040

FL Pompano Beach
Lundy Electronics & Systems Inc
3901 NE 12 Ave
305-943-1500

GA Atlanta
Lundy Electronics & Systems Inc
2936M N Druid Hills Rd NE
404-296-7777

IL Chicago
Lundy Electronics & Systems Inc
222 W Adams St
312-726-3103

NJ Howell
Lundy Electronics & Systems Inc
16 Underhill Rd
201-364-5799

NY New York
Lundy Electronics & Systems Inc
76 Beaver St
212-943-2921

NC Charlotte
Lundy Electronics & Systems Inc
Wilkinson Blvd
704-394-1161

TX Houston
Lundy Electronics & Systems Inc
Box 61291
713-521-0818

VA Springfield
Lundy Electronics & Systems Inc
8001 Forbes Pl
703-321-7650

ENGLAND

Portsmouth
Lundy Electronics & Systems Inc
Ordnance Row
0705-28866

LYNN ELECTRONICS CORP

915 Pennsylvania Blvd
Feasterville, PA 19047
215-677-6700
Contact: Don Giacomarra
■ Products & Services
Cables, electrical prefabricated extending
Data jacks and plugs

Branch Sales Offices:

- IL** Lombard
RMP/McBride Corp
67A Eisenhower La.S
312-932-9090
- LA** Kenner
EDS Assoc
3118 Colorado Ave
504-466-7475
- NJ** Livingston
Accurate Wire & Cable Co
65 Edgemere Rd
201-533-0103
- PA** Philadelphia
Stanton J Shelton
436 E Allens La
215-248-0131
- PA** Ambridge
R R Meinert Co
508 Merchant St
412-266-8050
- RI** Slatersville
Norman J Langelier Co
1433 Victory Hwy
401-766-3811
- WA** Auburn
Norcom Agency
Box 1072
206-852-5510
- PUERTO RICO**
Caparra Heights
G & G Telecom
Box 11216
809-724-5281
- ISRAEL**
Hod Hasharon
Rosenfeld-Massafi Co Ltd
Box 42
972-052-09578

MACROLINK

1740 E S Anaheim Blvd
Anaheim, CA 92805
714-535-4500
Contact: Bill Goodale
■ Products & Services
Add-on main memory
Disc drives, large
Tape drives, magnetic
Computer/communications interfaces

Branch Sales Offices:

- MD** Wheaton
Data Systems Marketing
11141 Georgia Ave
301-933-0900
- MA** Action
R D Stout Assoc
75 Great Rd
617-263-1128
- OH** Dayton
E V Swenson Assoc
5250 Far Hills Ave
513-435-2772
- TX** Dallas
SCI Sales Inc
13771 N Central Ex
214-234-8072

MADZAR CORP

37490 Glenmoor Dr
Fremont, CA 94536
415-794-7400
Contact: S Edmund Johnson
■ Products & Services
Modems, limited distance

MAGNAVOX DATA SYSTEMS INC

2990 Telestar Ct
Falls Church, VA 22042
703-698-9250
Contact: Walter Russell
■ Products & Services
Data communications software, independent
software houses

MAGNAVOX GOVERNMENT & IND**ELECTRONICS CO
MAGNAVOX DISPLAY SYSTEMS**

1313 Production Rd
Ft Wayne, IN 46808
219-482-4411
Contact: T R Hunt
■ Products & Services
Graphic display terminals
Programmable terminals
Interactive terminals

Branch Sales Offices:

- AL** Huntsville
Flex-Comm International
Box 4530
205-533-3165
- AZ** Phoenix
Peripherals Inc #47
6525 N 15th Ave
602-242-7800
- CA** Los Altos
Casey Johnston Assoc
One First St
415-941-6892
- CA** Canoga Park
Chandler Assoc
7032 Owensmouth Av
213-340-6103
- GA** Atlanta
Flex-Comm International
3379 Peachtree Rd NE
404-237-9242
- IL** Park Ridge
Ad-Tech Inc
701 S Lincoln Av
312-692-7320
- MD** Silver Spring
Spectro Systems
11141 Georgia Av
801-949-8261
- MA** Southboro
Victor Associates
304 Tpke Rd
617-481-3515
- MI** Dearborn Hts
Electro Sales Assoc
22126 Ford Rd
313-561-0045
- MN** Eden Prairie
Scientific Devices
7032 Willow Creek Rd
612-944-3535
- MO** St Louis
Eng Services
8420 Delmar Blvd
314-997-1515
- MO** Independence
Eng Services
2425 S Chrysler
816-254-3600

- NY** Hicksville
F & F Assoc
161 Levittown Pkwy
516-935-1100
- NC** Hendersonville
Flex-Comm International
Box 1551
704-693-0920

- OH** Cleveland
Electro Sales Assoc
851 E 222 St
216-261-5440

- OH** Dayton
Electro Sales Assoc
1635 Mardon Dr
513-426-5511

- OR** Lebanon
DPM Inc
34893 Bond Rd
503-223-0805

- PA** Valley Forge
J E Cuesta & Co
Box 188
215-265-5800

- PA** N Versailles
Electro Sales Assoc
700 Lincoln Hwy
412-823-0932

- TX** Richardson
Comspec Inc
717 Lingco 212
214-234-4137

- WA** Bellevue
DPM Inc
15935 NE 8th St
206-747-3309

BRITISH COLUMBIA, CANADA

Delta
Graphics Systems Ltd
5976 Kirkwood Rd
604-943-1383

QUEBEC, CANADA

Montreal
Consolidated Cybernetics
Controls Ltd
1509 Sherbrooke St W

THE MAINE MFG COMPANY

Box 408
Nashua, NH 03061
800-258-1768
Contact: Wilfred Red Dionne
■ Products & Services
Furniture, cabinets, terminal enclosures

**MANAGEMENT SCIENCE AMERICA
INC**

3445 Peachtree Rd NE
Atlanta, GA 30326
404-262-2376
Contact: Robert Carpenter
■ Products & Services
Data communications software, independent
software houses

Branch Sales Offices:

- CA** Marina Del Rey
MSA Inc
4676 Admiralty Way
213-822-9766
- CA** Burlingame
MSA Inc
One Bay Pl
408-996-3955
- DC** Alexandria
MSA Inc
300 Lee St
703-836-3959

GA Atlanta
MSA Inc
3445 Peachtree Rd NE
404-262-2376

GA Atlanta
MSA Inc
57 Executive Park South NE
404-325-7900

IL Oak Brook
MSA Inc
2905 Butterfield Rd
312-986-2450

MA Boston
MSA Inc
50 Staniford St
617-227-3626

NJ Fort Lee
MSA Inc
Fort Lee Executive Park
201-871-4700

NC Albuquerque
MSA Inc
7421 Santiago Rd SW
505-873-3120

OH Worthington
MSA Inc
250 E Wilson Bridge Rd
614-436-2280

PA Fort Washington
MSA Inc
455 Pennsylvania Ave
215-643-5276

TX Dallas
MSA Inc
2964 LBJ Frwy
214-243-2924

TX Houston
MSA Inc
2190 N Loop West
713-688-8111

WA Seattle -
MSA Inc
11040 Main St
206-253-0499

ALBERTA, CANADA
Calgary
MSA Inc
808 4th Ave SW
403-237-0216

ONTARIO, CANADA
Toronto
Toronto District Office
Box 144; N Tower Royal Bank Plaza
416-865-0683

QUEBEC, CANADA
St Laurent
Montreal District Office
100 Alexis Nihon Blvd
514-747-4716

AUSTRALIA
North Sydney
MSA (Australia) Pty Ltd
100 Miller St
61-2-929-0711

BELGIUM
1170 Brussels
MSA International Inc
Chaussee de la Hulpe
32-2-673-9963

ENGLAND
Slough
MSA Ltd
1-9 Wexham Rd
44-753-70751

MANNESMANN TALLY

8301 S 180th St
Kent, WA 98031

206-251-5552

Advertising page 124

Contact: W David Del Valle

■ Products & Services

Bar code readers

Programmable terminals

Interactive terminals

Portable data entry terminals

Remote line printers

Remote job entry terminals

Teleprinters, impact

Teletypewriters

Video data terminals (KSR)

Video data terminals (RO)

Branch Sales Offices:

AL Huntsville
Mannesmann Tally Corp
110 Lily Flagg Rd
205-882-0506

CA Redondo Beach
Mannesmann Tally Corp
1826 S Elena St
213-378-0805

CA San Jose
Mannesmann Tally Corp
4040 Moorpark Av
408-247-0897

CA Anaheim
Mannesmann Tally Corp
2120 E Howell Av
714-634-1114

CA Orinda
Mannesmann Tally Corp
23 Altarinda Rd
415-254-8350

CA Fremont
Mannesmann Tally Corp
555 Mowry
415-794-7311

FL Pompano Beach
Mannesmann Tally Corp
4699 N Federal Hwy
305-781-0793

GA Atlanta
Mannesmann Tally Corp
6520 Powers Ferry Rd
404-955-1630

IL Schaumburg
Mannesmann Tally Corp
Bldg #4 890 E Higgins Rd
312-885-3678

MA Burlington
Mannesmann Tally Corp
113 Terrace Hall Av
617-272-8070

PA Blue Bell
Mannesmann Tally Corp
1777 Walton Rd
215-628-9998

TX Dallas
Mannesmann Tally Corp
2925 LBJ Fwy
214-620-7311

WA Kent
Mannesmann Tally Corp
8301 S 180th St
206-251-6730

AUSTRIA
Vienna
Mannesmann Tally Corp
Zetchegeasse 17
43-222-672647

For local phone numbers of companies, turn to **Vendor Directory, page 301.**

ENGLAND

Reading, Berkshire
Mannesmann Tally Corp
7 Cremyll Rd
44-734-580-141

FRANCE

Chatou
Mannesmann Tally Corp
40 Chemin Des Vignobles
33-1-913-5827

GERMANY, WEST

Frankfurt/Main
Mannesmann Tally Corp
Sontraer Strasse 18
49-611-417191

ITALY

Milano
Mannesmann Tally Corp
Via Ciardi, 1
39-02-404-5546

MARTIN MARIETTA DATA SYSTEMS

300 E Joppa Rd
Baltimore, MD 21204
301-321-5700

Contact: C Donald McCullough

■ Products & Services

Data communications software, independent software houses

Timesharing/service bureaus

Branch Sales Offices:

CA San Francisco
Martin Marietta Data Systems
One Market Pl
415-777-1430

CA Los Angeles
Martin Marietta Data Systems
2029 Century Pk E
213-552-9541

CO Lakewood
Martin Marietta Data Systems
3900 S Wadsworth Blvd
303-977-3000

FL Orlando
Martin Marietta Data Systems
Sand Lake Rd
305-855-1050

GA Atlanta
Martin Marietta Data Systems
Three Piedmont Ctr
404-261-0641

IL Chicago
Martin Marietta Data Systems
2340 S Arlington Heights Rd
312-364-8111

IN Indianapolis
Martin Marietta Data Systems
5987 E 71st St
317-842-7992

MD Bethesda
Federal Systems Division
6801 Rockledge Dr
301-897-6350

MI Southfield
Martin Marietta Data Systems
4000 Town Center
313-352-4640

MN Minneapolis
Martin Marietta Data Systems
7901 Flying Cloud Dr
612-941-0170

NY New York
Martin Marietta Data Systems
1301 Ave of the Americas
212-541-4740

NC Winston-Salem
Martin Marietta Data Systems
514 S Stratford Rd
919-725-5133

OH Cleveland
Martin Marietta Data Systems
55 Public Square
216-687-0310

PA Philadelphia
Martin Marietta Data Systems
2000 Market St
215-963-0225

PA Pittsburgh
Martin Marietta Data Systems
5 Gateway Ctr
412-562-9405

TX Houston
Martin Marietta Data Systems
One Riverway
713-840-0394

WI Milwaukee
Martin Marietta Data Systems
933 N Mayfair Rd
414-257-4009

ENGLAND
London
Hoskyns Group Ltd
91-93 Farringdon Rd
01-242-1951

MASTER SPECIALTIES CO

1640 Monrovia Ave
Costa Mesa, CA 92627
714-642-2427
Contact: Kenneth T Renaud
■ Products & Services
Telephone companies
Digitized-voice processors
Audio response units
Automatic answering units
Data security devices, personal
identification systems
Voice adapters

Branch Sales Offices:

AL Huntsville
Brandel-Stephens
Box 4131
205-883-0445

CA Costa Mesa
MSC
1640 Monrovia Av
714-642-2427

FL Orlando
Brandel-Stephens & Co
749 N Garland Ave
305-425-3202

FL Deerfield Beach
Brandel-Stephens & Co Inc
600 S Federal Hwy
305-427-8558

GA Atlanta
Brandel-Stephens & Co
3110 Maple Dr
404-261-7579

IL Oak Park
Splon Assoc
1124 S Clarence
312-383-6580

IA Cedar Rapids
Technical Representatives Inc
1930 St Andrews Dr NE
319-393-5510

KS Kansas City
Technical Representatives Inc
VFW Bldg. 406 W 34th
816-756-3575

MD Glen Burnie
Tri Mark Inc
95 Aquahard Rd
301-768-2800

MA Andover
Richard Purinton Inc
28 Park St
617-475-7055

MI Ann Arbor
O-M Sales Inc
3003 Washtenaw
313-973-9450

MN Eden Prairie
Peterson & Wolff
6440 Flying Cloud Dr
612-941-5400

MO Wichita
Technical Representatives Inc
360 N Rock Rd
316-681-0242

MO Earth City
Tech Rep Inc
502 Earth City Plaza Bldg
314-291-0001

NY Jericho
Electro-Rep
366 N Broadway
516-938-0540

NY Pittsford
Noeth-Honsinger
Box 305
716-586-9002

NC Greensboro
Brandel-Stephens
1400 Battleground
919-274-6952

OH Mentor
O-M Sales Inc
6101 Andrew Rd
216-257-5244

PA Newtown Square
MSC
11 St Albans Cir
215-356-1050

PA Huntingdon Valley
Inacker Sales
One Fairway Plaza
215-947-5660

TX Dallas
Kruvand Assoc Inc
10300 N Central Exprwy
214-691-4592

TX Houston
Kruvand Assoc Inc
7333 Harwin Dr
713-780-9710

TX Austin
Kruand Assoc
8330 Burnet Rd
512-458-9204

ONTARIO, CANADA
Willowdale
Avotronics Ltd
200 Consumers Rd
416-493-9711

NETHERLANDS
Zaandamm, 1500 AD
MSC
Box 1185, Havensbraat 8A
075-169744

MAXELL CORPORATION OF AMERICA

60 Oxford Dr
Moonachie, NJ 07074
201-440-8020
Contact: Al Lustig
■ Products & Services
Cassettes
Discs, floppy

MAXI-SWITCH CO

9697 E River Rd
Minneapolis, MN 55433
612-755-7660
Contact: Don Powellek

Branch Sales Offices:

CA Burlingame
Wm J Purdy Co
770 Air Port Rd
415-347-2353

CA Culver City
De Angelo Rothman & Co
12069 W Jefferson
213-827-2202

CO Denver
Williams Assoc
4614 Ironton St
303-373-4730

FL Pompano Beach
V G Sales Co Inc
2500 NW 16 Ln
305-971-0900

IL Bensenville
Central Sales
358 Country Club Dr
312-595-2110

KS Shawnee Mission
BC Electronics
8190 Nieman Rd
913-888-6680

MA Chelmsford
Marty Flynn Assoc
190 Hunt Rd
617-256-6229

MI Grand Rapids
R P Urban & Assoc
1119 Burton St
616-245-0511

MN Minneapolis
Quantum Sales
4815 W 77
612-831-8583

NY Penfield
John Blair
15 Stone Island
716-586-1419

NC Cary
Montgomery Mktg
1212 Lane Dr
919-467-6319

OH Brecksville
Allen Nace Co Inc
7601 Parkview Rd
216-526-4323

PA Huntingdon
Knowles Assoc
1 Fairway Plaza
215-947-5641

TX Dallas
West & Assoc Inc
4300 Alpha Rd
214-661-9400

WA Seattle
Wm J Purdy Co
815 W Ewing
206-284-8020

MDB SYSTEMS INC

1995 N Batavia St
Orange, CA 92665
714-998-6900
■ Products & Services
Computer/communications interfaces

Branch Sales Offices:

FL MDB Systems Inc
305-254-2511

HI The Thorson Co
808-524-8633

MD MDB Systems Inc
703-893-0753

- MA**
MDB Systems Inc
617-444-1800
- NC**
MDB Systems Inc
408-733-3950
- TX**
MDB Systems Inc
214-559-3890
- ARGENTINA**
Buenos Aires
Thiko SA
Peru 653
30-4132
- AUSTRALIA**
Victoria
Anderson Digital Equip Pty Ltd
Box 322
03-543-2077
- BELGIUM**
Zaventem
ASAC
Leuvensesteenweg 186
02-720-90-38
- DENMARK**
Copenhagen
Imdata
Svanevej 4
01-83-34-00
- ENGLAND**
Reading/Berkshire
Data Translation Ltd
Sutton Park Industrial Estate
0734-669335
- FINLAND**
Helsinki
Turion Oy
Pyynikintie 5K 00710
580-377787
- FRANCE**
Buc
Yrel
ZI Rue Fourny
956-81-42
- GERMANY, WEST**
Munich
Stemmer Elektronik
Nordendstrasse 7
0-89-80-60-61-62
- GREECE**
Athens
EleComp Ltd
224 Synrou Ave
9514-944
- HONG KONG**
Hong Kong
Data Equipment Int Ltd
458-468 Hennessey Rd
5-771768
- INDIA**
Bombay
Sapphire Innovators Pvt Ltd
516 Raheja Chambers
231040
- ISRAEL**
Jerusalem
Eldan Elect Instr Co Ltd
16 Oholiav St
533221
- ITALY**
Milan
Data Peripheral Italiana
Palestrina 40
02-220230
- JAPAN**
Tokyo
ASR Corp Int'l
3-15-8 Nishi-Shimbashi
03-437-5371
- MALAYSIA FED OF**
Kuala Lumpur
Unidata Stn Bhd
Syed Kechik Bldg
940666
- NETHERLANDS**
Zeist
Datacare BV
28 Pasthuis 2
02-720-90-38
- NEW ZEALAND**
Victoria
Anderson Digital Equip
1 Expo Ct
03-543-2077
- NORWAY**
Oslo
Scancopter AS
Sandakervein 72
02-22-98-50
- PHILIPPINES**
Makati
Decision Systems
150 Amorsolo St
89-10-96-98
- SINGAPORE**
Singapore
Unidata Pty Ltd
12-301 Merlin Plaza
- SOUTH AFRICA**
Sunnyside
Medusa Trading Ltd
Box 28988
832385
- SWEDEN**
Vallingby
Scancopter AB
Box 4428
08-38-00-65
- SWITZERLAND**
Zurich
Adcomp AG
Steinwiesenstrasse 3
01-730-48-48
- MDS/TRIVEX**
3180 Red Hill Ave
Costa Mesa, CA 92626
714-546-7781
Contact: C H Simmons
■ Products & Services
Interactive terminals
Remote line printers
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
- Branch Sales Offices:**
CA Costa Mesa
MDS Trivex
3180 Red Hill Av
714-546-7781
CA San Francisco
MDS Trivex
2333 Anza
415-386-6344
CA Santa Ana
MDS Trivex
1815 S Ritchey St
714-972-2778
FL Miami
MDS Trivex
8400 NW 52nd St
305-592-8410
- IL** Oak Brook
MDS Trivex
1302 W 22 St
312-325-8108
- MI** Southfield
MDS Trivex
4000 Town Center
313-352-5130
- MO** St Louis
MDS Trivex
12300 Olive St
314-878-3340
- NJ** Fort Lee
MDS Trivex
2175 Lemoine Av
201-461-4712
- VA** Vienna
MDS Trivex
8300 Old Courthouse Rd
703-734-3201
- MEGADATA CORP**
35 Orville Drive
Bohemia, NY 11716
516-589-6800
Contact: Harold Schafer
■ Products & Services
Modem sharing units
Disc drives, floppy
Disc drives, large
Tape punch/reader, paper
Data entry terminals
Graphic display terminals
Programmable terminals
Teleprinters, impact
Word processors, communicating
Data communications software, intelligent
terminal vendors
- Branch Sales Offices:**
MD Bethesda
Warner Associates
9911 Carter Rd
301-469-8904
NY New York
Megadata Corp
50 Broad St
212-344-7100
TX Houston
Peripheral Products Corp
5401 Mitchelldale
713-681-8558
- MEGATEK**
3931 Sorrento Valley Blvd
San Diego, CA 92121
714-455-5590
Contact: Pat Burke
■ Products & Services
Graphic display terminals
Interactive terminals
- Branch Sales Offices:**
NETHERLANDS
4031 JA Ingen
Megatek International
11 Woudstraat
31-3443-2800
- MEMODYNE CORP**
220 Reservoir St
Needham Heights, MA 02194
617-444-7000
Contact: N H Renaud
■ Products & Services
Data content monitors
Cassettes
Cassette drives

Want to receive announcements of new products?
Turn to **UpDate Service Card, page 201.**

Branch Sales Offices:

AL Huntsville
Col-Ins Co
800-327-6600

AZ Tempe
J F Hurlbut
602-968-5962

CA Los Angeles
Western Scientific
213-628-8023

CA Orange
Western Scientific
714-634-8593

CO Golden
J F Hurlbut
303-279-7796

FL Orlando
Col-Ins Co
305-423-7615

FL Coral Springs
Col-Ins Co
800-432-4480

GA Clarkston
Col-Ins Co
800-327-6600

HI Honolulu
Aloha Associates
808-941-1574

IL Elmhurst
Scott Assoc
312-279-5681

KS Shawnee Mission
Midtec Assoc
913-441-6565

MD Linthicum Heights
K D Assoc
301-636-1151

MI South Lyons
Infinity
313-437-2705

MO Florissant
Midtec Assoc
314-837-5200

NY Elmont
Crane & Egert Corp
516-488-2100

NY Clark Mills
KLM/Garner
315-853-6126

NY Syracuse
KLM/Garner
315-458-6214

NY Pittsford
KLM/Garner
716-381-8350

NC Winston-Salem
Col-Ins Co
800-327-6600

OH Cleveland
Geotronics
216-526-2535

OH Columbus
Geotronics
614-457-8472

OK Oklahoma City
Data Mkt Assoc
405-528-6071

OR Portland
Topp Engr Sales corp
503-244-7265

TX Houston
Data Mkt Assoc
713-780-2511

TX Dallas
Data Mkt Assoc
214-661-0300

TX San Antonio
Data Mkt Assoc
512-828-0937

TX Austin
Data Mkt Assoc
512-451-5174

WA Bellevue
Topp Engr Sales Corp
206-747-5400

BRITISH COLUMBIA, CANADA
Vancouver
Canadian Dynamics Nova Ltd
604-324-3116

ONTARIO, CANADA
Toronto
Vitel Electronics
416-622-6300

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

MEMOREX COMPUTER MEDIA GROUP
1200 Memorex Dr
Santa Clara, CA 95052
408-987-3182

MEMOREX CORP

18922 Forge Dr
Cupertino, CA 95014
408-996-9000

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Contact: Rich McCrancy

Products & Services

Concentrators
Front-end processors
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Data entry terminals
Interactive terminals
Remote line printers
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Cables, electrical prefabricated extending
Computer/communications interfaces
Switches, data communications, manual
Data communications software,
communications processors vendors
Lease and resale organizations
Maintenance organizations
Teleprocessing monitors

Branch Sales Offices:

AL Birmingham
110 Office Park Dr
205-870-4246

AZ Phoenix
2323 N Third St
602-254-5466

AR Little Rock
1515 West 7
501-374-0279

CA Anaheim
305 Crescent Way
714-776-8571

CA Long Beach
2501 E 28 St
213-595-4656

CA Los Angeles
11340 W Olympic Blvd
213-473-0811

CA San Diego
8334 Clairemont Mesa Blvd
714-571-1133

CA San Francisco
300 Montgomery St
415-397-9496

CA Santa Clara
3255-2 Scott Blvd
408-987-1450

CO Denver
789 Sherman
303-837-0205

CT Old Greenwich
1445 E Putnam Ave
203-637-5241

CT East Hartford
111 Founders Plaza
203-568-1370

DC Mclean
1970 Old Chain Bridge Rd
703-821-3300

FL Jacksonville
4814 Phillips Hwy
904-731-1744

FL Hialeah
1840 W 49 St
305-558-9320

GA Atlanta
50 Executive Park Dr NE
404-321-0200

IL Lombard
335 Eisenhower La S
312-620-3200

IL Peoria
2214 N University
309-688-2406

IN Indianapolis
6201 La Pas Trail
317-293-8055

KS Mission
5700 Broadmoor
913-362-1650

KY Louisville
9112 Leesgate Rd
502-425-8395

LA New Orleans
1070 St Charles St
504-522-4401

MD Hunt Valley
11350 McCormick Rd
301-366-8800

MA Waltham
470 Totten Pond Rd
617-890-0700

MI Southfield
24681 Northwestern Hwy 24
313-354-4511

MN Bloomington
One Appletree Sq
612-835-6635

MO St Louis
12115 Lackland Rd
314-576-4570

NE Omaha
7701 Pacific
402-391-0486

NJ West Orange
59 Main St
201-325-0164

NY Albany
125 Wolf Rd
518-458-7099

NY Williamsville
5500 Main St
716-631-5410

NY New York
1700 Broadway
212-541-7780

NY Liverpool
897 North St
315-451-4330

NC Charlotte
2 Woodlawn Green
704-527-4923

NC Greensboro
3407 W Wendover Ave
919-294-4374

OH Cincinnati
644 Linn St
513-621-7120

OH Valley View
5811 Canal Rd
216-447-0780

OH Columbus
1395 E Dublin-Grandville Rd
614-885-0415

OH Columbus
3901 Barrett
919-787-7660

OK Oklahoma City
420 NW 13
405-235-1245

OK Tulsa
9810 E 42 St
918-622-6743

OR Portland
7100 SW Hampton St
503-620-4800

PA King of Prussia
741 5th Ave
215-337-1050

PA Pittsburgh
1910 Cochran Rd
412-531-8711

RI Providence
933A Waterman
401-728-1860

SC Greenville
400 S Pleasantburg
803-232-8217

TX Irving
1621 Walnut Hill
214-258-3510

TX Houston
2021 Governors Circle
713-688-1451

VA Richmond
6620 W Broad St
804-288-3116

WA Seattle
631 Strander Blvd
206-575-3823

WI Milwaukee
10201 W Lincoln Ave
414-327-4040

WI Eau Claire
1414 Hamilton
715-834-7131

MEMOTEC**DIV INT SYSTCOMS LTD**

49400 Fisher St
Montreal, Quebec H4T 1J7
514-738-4781

Advertising page 33

Contact: F A Paulnitz

■ Products & Services

Multiplexers, statistical (intelligent)

Packet processors

Remote network processors

Branch Sales Offices:

NJ Ringwood
Memotec
Box 372
201-529-5722

MFE CORP

Keewaydin Dr
Salem, NH 03079
603-893-1921
Contact: P D Ellis

■ Products & Services

Cassettes

Cassette drives

Disc drives, floppy

Floppy disc recorders

Tape, magnetic

Batch terminals

Word recognition units

Automatic answering units

Branch Sales Offices:

AL Atlanta
Reynolds & Assoc
5057 Vernon Springs Dr
404-393-9113

AK Anchorage
Harry J Lang & Assoc
1406 W 47 Av
908-279-5741

AZ Tempe
Qualtech Inc
610 W Broadway
602-967-4655

AR Dallas
The Thorson Co
4445 Alpha Rd
214-233-5744

CA Los Angeles
The Thorson Co
520 So Sepulveda Blvd
213-476-1241

CA Mountain View
The Thorson Co
625 Ellis St
415-964-9300

CA Irvine
The Thorson Co
17775 Main St
714-557-4460

CA Goleta
The Thorson Co
340 So Kellogg Av
805-964-8751

CA San Diego
The Thorson Co
7841 Balboa Av
714-292-8525

CO Evergreen
Westek Data Products Inc
25921 Fern Gulch
303-674-5255

CO Boulder
Westek Data Products Inc
1322 Arapahoe Rd
303-449-2620

CT Natick
Andruss-Peskin Corp
Box 268
617-653-3919

DE Hatboro
QED Electronics
300 N York Rd
215-674-9600

FL Jupiter
FM Associates
Box 996
305-746-2996

FL Orlando
FM Associates
Box 13705
305-851-5710

FL Ft Lauderdale
Reynolds & Assoc Inc
161 SW 75 Ave
305-581-6611

FL Satellite Beach
Reynolds & Assoc Inc
476 N A1A #1
305-773-4700

FL St Petersburg
Reynolds & Assoc Inc
11405 8 St E
813-360-1484

GA Atlanta
FM Associates
Box 9901
404-634-7830

GA Atlanta
Reynolds & Assoc Inc
5057 Vernon Springs Dr
404-393-9113

HI Honolulu
Aloha Associates
1919 Hunnewell St
808-942-1574

HI Honolulu
Aloha Assoc
Century Commercial Ctr;1750
Kalakaua Ave
808-941-1574

IL Chicago
Carter Electronics
4919 W 63 St
312-585-5485

IL Elmhurst
Sector Engineering Sales Inc
770 N Church Rd
312-530-7850

IN Indianapolis
Carter Electronics
6333 Hollister Dr
317-293-0696

IN Indianapolis
Sector Engineering Sales Inc
10713 Wildwood Dr
317-842-1120

KS Overland Park
Ramsey Assoc
6900 W 80 St
913-649-6996

MD Annapolis
Bartek Associates
613 E Bayview
301-261-2987

MA Natick
Andruss-Peskin Corp
Box 268
617-653-3919

MI Farmington Hills
Carter McCormic & Peirce Inc
23995 Freeway Pk Dr
313-477-7700

MN Minneapolis
Carter Electronics
2415 Annapolis La
612-559-1976

MN Hamel
Spector Engineering Sales Inc
6200 Rolling Hills Rd
612-478-6675

MO St Louis
Carter Electronics
1901 Congressional Dr
314-596-1406

MO St Louis
Ramsey Assoc
1901 Congressional Dr
314-569-1406

NJ Englishtown
Triple E
32 Bunker Hill Dr
201-446-4222

NM Albuquerque
Mountaintek
6022 Constitution Av NE
505-265-8521

NM	Albuquerque Qualtech Inc 310 Louisiana NE 505-255-6100	WI	Milwaukee Sector Engineering Sales Inc 8705 Port Washington Rd 414-352-8282	CA	Lodi Moxon Electronics 312 W Walnut 209-369-1883
NY	Buffalo H C Johnson Agencies 5900 Main St 716-632-7880	ONTARIO, CANADA	Ottawa ON Allcom Data Ltd 1980 Merivale Rd 613-226-2340	CA	Santa Clara Moxon Electronics 2376 Walsh Rd 408-727-6491
NY	Albany H C Johnson Agencies 105 Wolf Rd 518-459-1239	ONTARIO, CANADA	Etobicoke ON RFQ Ltd 385 The West Mall 416-626-1445	CA	San Diego Moxon Electronics 9580 Black Mountain 714-578-5760
NY	Fayetteville H C Johnson Agencies Box 215 315-637-9383	ONTARIO, CANADA	Ottawa ON Louis Albert Assoc 2264 Stevenage Dr 613-727-5941	CO	Denver BFA Corp 12015 E 46 Ave 303-371-2422
NY	Rochester H C Johnson Agencies 875-Atlantic Av 716-482-3000	ONTARIO, CANADA	Mississauga ON Louis Albert Assoc 6205 Airport Rd 416-677-5888	CT	Westport Maguire & Assoc Box 666 203-226-4281
NY	Buffalo H C Johnson Agencies Inc 5900 Main St 716-632-7880	QUEBEC, CANADA	Quebec RFQ Ltd Dollard Des Ormeaux 514-694-5724	CT	Guilford R H Sturdy Co 32 Horseshoe Rd 203-453-5424
NC	Ramseur FM Associates Box 156 919-824-8461	SWITZERLAND	Vevey MFE Products SA Av du General Guisan 58 021-52-80-40	FL	Orlando Col-Ins Co Inc Box 13189 800-432-4480
NC	Winston Salem Reynolds & Assoc Inc 614 First Union Bldg 919-725-6196			FL	Coral Springs Col-Ins-Co Box C-8827 800-432-4480
OH	Fairview Park Carter McCormic & Peirce Inc 22650 Lorain Rd 216-779-5100			GA	Atlanta Col-Ins-Co Box 559 800-327-6600
OH	Dayton Carter McCormic & Peirce Inc 4977 Northcut Pl 513-222-7700	MICOM SYSTEMS INC	9551 Irondale Ave Chatsworth, CA 91311 213-882-6890 Advertising pages Cover III,37,67 Contact: Patrick H Bourgeois ■ Products & Services Concentrators Multiplexers, time division Inverse multiplexers Multiplexers, statistical (intelligent) Multiplexers, group band Port selectors Port sharing units Line drivers Modems, limited distance Modems, multipoint Modems, multiport Modems, voice-grade, medium speed (1,800-3,600 b/s) Modems, voice-grade, high-speed (4,800-9,600 b/s) Modem eliminators RTS emulator Error controllers Protocol converters Switches, data communications, automatic	HI	Honolulu Gray Assoc 1269 Maleko 808-261-3751
OR	Portland The Thorson Co 7000 SW Hampton St 503-620-5800	Branch Sales Offices:		IL	Rolling Meadows SEA Inc 1225 Carnegie St 312-255-4820
PA	Hatboro QED Electronics 300 N York Rd 215-674-9600	AL	Huntsville Col-Ins-Co Box 4028 800-327-6600	IN	Carmel SEA Inc 624B So Range Line Rd 317-846-2591
PA	Monroeville Carter McCormic & Peirce 409 Beatty Rd 412-372-4415	AK	Anchorage Transalaska Data Systems 200 Center Ct 907-276-5616	LA	Baton Rouge Col-Ins-Co 11814 Coursey Blvd 800-327-6600
TX	Dallas The Thorson Co 4445 Alpha Rd 214-233-5744	AZ	Scottsdale BFA Corp 4426 Saddlebag Tr 602-994-5400	MD	Edgewater Commart Inc 3910 W Shore Dr 301-261-4344
TX	Houston The Thorson Co 6633 Hillcroft 713-771-3504	CA	Anaheim Moxon Electronics 1970 S Santa Cruz St 714-635-7600	MA	Wellesley Datamart Inc 180 Linden St 617-235-5520
TX	Austin The Thorson Co SW 300 E Huntland Dr 512-451-7527			MA	Wellesley Hills R H Sturdy Co 167 Worcester St 617-235-2330
UT	Salt Lake City Mountaintek 3788 Brockbank Dr 801-278-6920	MI	Madison Heights WKM Assoc 345 Girard St 313-588-2300		
UT	Salt Lake City Westek Data Products Inc 3788 Brockbank Dr 801-278-6920	MN	Minneapolis SEA Inc 7601 N Kentucky Ave 612-425-4455		
WA	Bellevue The Thorson Co One Lake Bellevue Dr 206-455-9180	MO	Independence Information Products 1201 Randal Rd 816-252-3700		
WI	Milwaukee Carter Electronics 3958 N 51 Blvd 414-464-5555			MO	Clayton Information Products 230 S Bemiston 314-721-0401

- NE Omaha
Information Products
5705 S 152nd Ave
402-895-5850
- NH Windham
R H Sturdy Co
8 Birchwood
Cherry Hill
Megargel/Himmelstein Assoc
2428 Rt 38
609-779-0200
- NJ Albuquerque
BFA Corp
1704 Moon NE
505-292-1212
- NM Las Cruces
B F A Corp
Box 1237
505-524-9693
- NY New York
Glasgal Comm
521 S Ave
212-687-2455
- NY Rochester
R G Engineering
3100 Monroe Ave
716-385-3021
- NY Selkirk Calbany
R G Engineering
6 Sherbrook Dr
518-439-3070
- NC Winston Salem
Col-Ins-Co
Box 11607
800-327-6600
- OH Cleveland
WKM Assoc
16141 Puritas Ave
216-267-0445
- OH Dayton
WKM Associates
7913 S Suburban
513-434-7500
- OR Portland
Rush S Drake Assoc
Box 8009
503-224-3145
- PA Pittsburgh
WKM Assoc
90 Clairton Blvd
412-892-2953
- PA King of Prussia
Micom Systems Inc
1004 W Eighth Ave
215-337-4855
- SC Greenville
Col-Ins-Co
215 McSwain Dr
800-327-6600
- TN Nashville
Col-Ins-Co
1804 Linden Ave
800-327-6600
- TX Dallas
Data Aids Assoc
2880 LBJ Freeway
214-620-1551
- TX Houston
Data Aids Assoc
1440 N Loop
713-862-6685
- UT Salt Lake City
BFA Corp
140 W 2100 S
801-466-6522
- WA Seattle
Rush S Drake Assoc
11524 NE 15th
206-364-8830
- WI Waukesha
SEA Inc
2423 Pebblevalley Rd
414-547-6637
- BRITISH COLUMBIA, CANADA
Vancouver
R-O-R Assoc Ltd
2415 Columbia
604-876-4311
- ONTARIO, CANADA
Scarborough
R-O-R Assoc Ltd
21 Rolark Dr
416-291-7121
- ONTARIO, CANADA
Ottawa
R-O-R Assoc Ltd
7 Slack Road
613-225-7646
- QUEBEC, CANADA
Montreal
R-O-R Assoc Ltd
3300 Cavendish
514-482-8430
- AUSTRALIA
Croydon
Datacraft Pty Ltd
Box 353
725-5477
- CHILE
Santiago
Sonda Ltda
Teatons 574
62277
- CYPRUS
Nicosia
Datacom Ltd
Box 5293
021-76214
- DENMARK
Koge
Trend Electronics
Tangmosevej 99
03-65-23-45
- FINLAND
Helsinki
Heath and Co
Porthaninkatu 9B
716707
- FRANCE
Paris
Satelcom International
69-71 Rue Du Chevaleret
584-11-16
- GERMANY, WEST
Bad Soden/TS
Telemation GmbH
Bismarckstrasse 8
06196-27054
- GUAM
Agana
Internat'l Marketing Mgt
Box 20938 GMF
671-646-7280
- HONG KONG
Causeway Bay
Datacraft (H K) Ltd
2-20 Paterson St
5-769078
- INDONESIA
Singapore
Total Computer Systems
50 Kallang Bahru
2934401
- ISRAEL
Haifa
Elbit Computers
Box 5390
03-454975/6
- ITALY
Osimo
Lenco Italia Spa
Via del Guzzatore 207
071-72803/4
- JAPAN
Tokyo
ITS-Japan Company Ltd
Chiyoda-Ku
03-262-2355
- MALAYSIA FED OF
Kuala Lumpur
Total Computer Systems
Box 2608
485347/480296
- NETHERLANDS
The Hague
Koning en Hartman
Elektrotechniek
30 Koperwerf
70-210101
- NEW ZEALAND
Wellington
Datacraft Ltd
417 Cuba St
661387
- SOUTH AFRICA
Randburg
Grinel Data Systems
Box 50994
011-789-1441
- SPAIN
Madrid
Specific Dynamics Iberia
Torrelaguna 61-1
01-403-0362
- SWEDEN
Sundbyberg
Heath & Co
Lotsjovagen 17-19
08-289480
- SWITZERLAND
Geneva
Interep SA
4, Cours Des Bastions
022-208346
- VENEZUELA
Caracas
Digidata C A
Esquina Calle 5
38 73 57
- MICON INDUSTRIES
252 Oak St
Oakland, CA 94607
415-763-6033
Contact: William E Northfield
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Portable data entry terminals
Teletypewriters, non-impact
Teletypewriters
Word processors, communicating
Branch Sales Offices:
MA Burlington
Micon Industries East
8 Blanchard Rd
617-273-3384
- MICRO COMMUNICATIONS CORP
80 Bacon St
Waltham, MA 02154
617-899-8111
Contact: Barbara A Church

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

■ Products & Services

Cartridges
Cartridge drives
Cassettes
Cassette drives
Tape, magnetic
Tape drives, magnetic

Branch Sales Offices:

MA Newton Center
Daner-Hayes
684 Comm Ave
617-969-4650

VA Arlington
H J Hefferman Co
1123 N Irving St
703-552-6666

AUSTRALIA

2560
Romtech Proprietary Ltd
B446 Campbelltown NSW
02-6014511

GERMANY, WEST

D-8000 Munchen 60
Ing Wernek Schwind
Landsberger Strabe 439
089-88-8202

INDIA

Bombay 400-021
Computer Maintenance Services
104 Embassy Ctr; Norman Point
214807

NETHERLANDS

4803 AS Breda
Famatra Benelex
B721
076-133457

SWEDEN

S-123 21 Farsta 1
Tel Inter AK
Box 59
08/94-04-90

MICROCOMPUTER SYSTEMS CORP

432 Lakeside Drive
Sunnyvale, CA 94086
408-733-4200
Contact: Ron Doiron
■ Products & Services
Cartridge drives
Disc drives, large

Branch Sales Offices:

MA Boston
MSC Boston
50 Saniford St
617-742-7011

MICRODATA CORPORATION

4000 MacArthur Blvd
Irvine, CA 92713
714-540-6730
Contact: Doug Tullio
■ Products & Services
Minicomputers
DDP systems
Local network systems
Interactive terminals

MICROFORM DATA SYSTEMS INC

830 Maude
Mountain View, CA 94043
415-964-4635
Contact: Ronald I Rowe
■ Products & Services
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband group (to 50 kb/s)

Branch Sales Offices:

CA Los Angeles
Robert C Clark
1730 W Olympic Blvd
213-385-7164

GA Atlanta
Tom Marengi
1925 Century Blvd NE
404-325-1031

IL Chicago
Robert Schechter
150 N Wacker Drive
312-236-6986

NY New York
Don Kugit
3 Park Avenue, 35th Floor
212-725-1350

NC Charlotte
Jim Stewart
7722 Gayle Avenue
704-535-6426

MICROPOLIS CORP

21329 Nordhoff St
Chatsworth, CA 91311
213-709-3300
Contact: James Molenda
■ Products & Services
Disc drives, floppy

Branch Sales Offices:

AL Huntsville
Pen-Tech Assoc
3322 Memorial Pkwy SW
205-881-9298

AK Redmond
Quadra Sales Corp
14825 NE 40 St
206-883-3550

CA Sunnyvale
Group III Electronics
542 Lakeside Dr
408-245-4392

CA Redondo Beach
Group III Electronics
2615 Manhattan Beach Blvd
213-973-7844

CA San Diego
Group III Electronics
7263 Engineer Rd
714-292-0525

DE Manchester
EMC Corp
48 Purnell Pl
203-646-8085

FL Maitland
Pen-Tech Assoc
Box 1475
305-645-3444

FL Deerfield Beach
Pen-Tech Assoc
201 SE 15 Ter
305-421-4989

GA Marietta
Pen-Tech Assoc
627 Cherokee St
404-424-1931

IL Chicago
Data Electronics
5808 W Higgins
312-283-0300

IN Indianapolis
Data Electronics
1150 N Shadeland Ave
317-359-5368

MD Rockville
Electronic Marketing Assoc
11716 Parklawn Dr
301-881-5300

MA Newton

EMC
385 Elliot St
617-244-4740

MI Farmington Hills
Carter-McCormic & Peirce Inc
23995 Freeway Park Dr
313-477-7700

MN Plymouth
Data Electronics
3140 Harbor Ln
612-559-1434

MO St Louis
Engineering Services Co
8420 Delmar Blvd
314-997-1515

NY Great Neck
Harvey J Krasher Assoc
87 Water Mill Ln
516-487-0690

NC High Point
Pen-Tech Assoc
1202 Eastchester Dr
919-883-9125

OH Cleveland
Carter McCormic & Peirce Inc
22650 Lorain Rd
216-779-5100

OH Dayton
Carter McCormic & Peirce Inc
4977 Northcutt Pl
513-222-7700

PA Pittsburgh
Carter McCormic & Peirce Inc
409 Beatty Rd
412-372-4415

PA Plymouth Meeting
Electronic Marketing Assoc
649 W Germantown Rd
215-248-5050

TX Dallas
US Data Assoc
14241 Proton Rd
214-661-9633

TX Houston
US Data Assoc
4120A Directors Row
713-681-0200

TX Austin
US Data Assoc
3913 Medical Pky
512-454-3579

WA Redmond
Quadra Sales Corp
14825 NE 40 St
206-883-3550

ONTARIO, CANADA

Ottawa
D G S Datagraphics
17 F Enterprise Ave
613-225-0411

AUSTRALIA

Rozelle
Ampec Engineering Co Pty Ltd
1 Wellington St
02-818-1166

BELGIUM

Brussels
C N Read Sa
Place de Jamblaine de Meux 37
02-3521-35

ENGLAND

Reading
Sintrom Ellinor Ltd
14 Arkwright Rd
0734-85464

FRANCE

Sevres
Tekelec-Airtronic
rue Carle Vernet
1 027-75-35

GERMANY, WEST

Eching
Kontron Elektronik GmbH
Breslauer Str 2
08165/77-1

GREECE

Athens 147
Dynamco Ltd
1 Tosita Str
01-89-31-198

ISRAEL

Haifa
Microcomputer Engineering Ltd
Box 7238
04 89670

ITALY

Milan
Macronics SA
Viale Jenner 38/40
6882141-2-3

JAPAN

Chuo-Ku
Shoshin Shoji Kaisha Ltd
Nihonbashi
270-5921

NEW ZEALAND

Auckland
Computer Store
22B Milford Rd
499-458

NORWAY

Oslo 1
Bohn Data
Tollbugt 2
02-41-40-50

SCOTLAND

Newburgh Fife
Data Systems Engineering
Shorehead Rd
03374469

SINGAPORE

50 Kallang Bahru
Total Computer Systems Pte
20-23F 6th Flr/Block 12

SOUTH AFRICA

Pinegowrie
Radiokom (1969) Pty Ltd
Box 56412
789-400

SWITZERLAND

Zurich
MST Micro-System-Technik AG
Badenerstrasse 296
01-242-1077

MICRO SWITCH DIV
HONEYWELL INC

11 West Spring St
Freeport, IL 60132
815-235-6600
■ Products & Services
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

CA Orange
Micro Switch; A Div of Honeywell
505 S Main St
714-558-7400

CA San Jose
Micro Switch; A Div of Honeywell
2025 Gateway Pl
408-998-3131

CO Englewood
Micro Switch; A Div of Honeywell
5115 S Valley Hwy
303-779-6439

CT Hartford
Micro Switch; A Div of Honeywell
90 Brainard Rd
203-549-3800

GA Atlanta
Micro Switch; A Div of Honeywell
6 W Druid Hills Dr NE
404-321-2565

IL Park Ridge
Micro Switch; A Div of Honeywell
1460 Renaissance Dr
312-296-0710

IA Bettendorf
Micro Switch; A Div of Honeywell
3705 Utica Ridge Rd
319-359-3441

MA Newton
Micro Switch; A Div of Honeywell
70 Wells Ave
617-969-0265

MI Southfield
Micro Switch; A Div of Honeywell
17515 W Nine Mile Rd
313-424-3569

MN Minneapolis
Micro Switch; A Div of Honeywell
7400 Metro Blvd
612-830-3516

MO St Louis
Micro Switch; A Div of Honeywell
2055 Craigshire Dr
314-878-2400

NJ Westfield
Micro Switch; A Div of Honeywell
574 Springfield Ave
201-233-9200

NY Elmsford
Micro Switch; A Div of Honeywell
570 Taxter Rd
914-592-3200

NY Rochester
Micro Switch; A Div of Honeywell
100 Metro Park
716-424-2700

NC Charlotte
Micro Switch; A Div of Honeywell
517 S Sharon Amity Rd
704-364-4770

OH Cleveland
Micro Switch; A Div of Honeywell
1001 E 55 St
216-361-7280

OH Dayton
Micro Switch; A Div of Honeywell
4540 Honeywell Ct
513-237-4075

PA Valley Forge
Micro Switch; A Div of Honeywell
Valley Forge Corp Ctr
215-666-8340

TX Dallas
Micro Switch; A Div of Honeywell
1111 W Mockingbird
214-688-7533

TX Houston
Micro Switch; A Div of Honeywell
8440 Westglen
713-780-6651

WA Bellevue
Micro Switch; A Div of Honeywell
600-108 Ave NE
206-453-7591

WI Brookfield
Micro Switch; A Div of Honeywell
150 N Sunnyslope Rd
414-784-6260

MICROWAVE ASSOCIATES INC

South Avenue
Burlington, MA 01803
617-272-3000

MINICOMPUTER SYSTEMS

399 Fairview Park Dr
Elmsford, NY 10523
914-592-8812
Contact: Arthur R Garofalo
■ Products & Services
Multiplexers, statistical (intelligent)
DDP systems
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

CA Anaheim
Mini-Computer Systems
2259 Via Burton
714-870-7660

MITRON SYSTEMS CORP

2000 Century Plaza
Columbia, MD 21044
301-992-7700
Contact: Roger D Marshall
■ Products & Services
Tape drives, magnetic
Batch terminals
Automatic calling units

MODEMS PLUS INC

217 E Trinity; PO Box 1727
Decatur, GA 30031
404-378-5276
Advertising page 38
Contact: Bill Atkinson
■ Products & Services
Line sharing units
Modem sharing units
Multiplexers, statistical (intelligent)
Port selectors
Protocol converters

Branch Sales Offices:

AL Birmingham
Modemsplus Inc
2600 Creekview Dr
205-979-8945

GA Decatur
Modemsplus Inc
217 E Trinity Pl
404-378-5276

MODTECH INC

1958 Helsinki Way
Livermore, CA 94550
415-455-0782
Contact: Donn R Estus
■ Products & Services
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modem eliminators
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Data access arrangement devices
Data jacks and plugs

Branch Sales Offices:

CA Fountain Valley
MQI Financial Corp
18381 Bandilier Cir
714-964-4722

For further catalog information, turn to
UpDate Service Card, page 201.

CA Mt View
MQI Financial Corp
2615 Miller
415-948-8561

MA Newton Highlands
Butler Assoc Inc
82A Winchester St
617-965-1080

MO Florissant
Selco Inc
525 St Francois
314-837-1211

QUEBEC, CANADA
Lachine Quebec
Electrodesign
1925 52nd Ave
514-636-4836

MODULAR COMPUTER SYSTEMS

1650 W McNab Rd
Fort Lauderdale, FL 33309
305-974-1380
Contact: Loren Warburg
■ Products & Services
Minicomputers
Remote network processors
Line drivers
DDP systems
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Portable data entry terminals
Teletypewriters
Video data terminals (KSR)
Computer/communications interfaces
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

AL Huntsville
Modular Computer Sys
4019 Summerhill Place
205-859-4887

CA El Segundo
Modular Computer Sys
888 N Sepulveda Blvd
213-640-1302

CA San Jose
Modular Computer Sys
3031 Tisch Way
408-247-4152

CO Englewood
Modular Computer Sys
6901 S Yosemite
303-773-6101

CT Farmington
Modular Computer Sys
790 Farmington Ave
203-677-4333

FL Orlando
Modular Computer Sys
7040 Lake Ellenor Dr
305-859-4612

GA Tucker
Modular Computer Sys
1726 Montreal Cir
404-938-9965

IL Elmhurst
Modular Computer Sys
118 Industrial Dr
312-833-5620

MA Lexington
Modular Computer Sys
1050 Waltham St
617-862-2366

MI Southfield
Modular Computer Sys
24901 Northwestern Hwy
313-353-3114

NJ Clark
Modular Computer Sys
727 Raritan Rd
201-574-0660

OH Cincinnati
Modular Computer Sys
11315 Reed Hartman Hwy
513-984-1440

PA Pittsburgh
Modular Computer Sys
2000 Sainte Claire Plaza
412-941-3560

TX Dallas
Modular Computer Sys
2874 LBJ Fwy
214-243-6088

TX Houston
Modular Computer Sys
1100 Nasa Road One
713-333-3250

For further catalog information, turn to
UpDate Service Card, page 201.

MODULAR FURNITURE CONCEPTS

23960 Madison St
Torrance, CA 90505
213-373-8630
Contact: Charles S Daniels
■ Products & Services
Furniture, cabinets, terminal enclosures

MOHAWK DATA SCIENCES CORP

7 Century Dr
Parsippany, NJ 07054
201-540-9080
Advertising page 122
Contact: John Crawford
■ Products & Services
DDP systems
Cartridge drives
Batch terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Word processors, communicating
Ribbons and supplies for terminals and
printers
Maintenance organizations

Branch Sales Offices:

AL Birmingham
Mohawk Data Sciences Corp
90 Bagby St
205-945-1847

AL Huntsville
Mohawk Data Sciences Corp
2109 W Clinton Ave
205-533-1966

AL Homewood
Mohawk Data Sciences Corp
90 Bagby Dr
205-666-6929

AL Montgomery
Mohawk Data Sciences Corp
777 Office Pk
205-262-1247

AZ Phoenix
Mohawk Data Sciences Corp
2721 N Central Ave
602-264-7363

AR Little Rock
Mohawk Data Sciences Corp
7501 I-30 Hwy
501-562-2875

CA Santa Monica
Mohawk Data Sciences Corp
3228 Nebraska Ave
213-829-9778

CA Palo Alto
Mohawk Data Sciences Corp
2464 Embarcadero Way
415-326-1577

CA Anaheim
Mohawk Data Sciences Corp
2101 W Crescent Ave
714-772-0803

CA Los Angeles
Mohawk Data Sciences Corp
6055 E Washington Blvd
213-728-7645

CA Los Gatos
Mohawk Data Sciences Corp
102 Cooper Ct
408-395-2160

CA Sacramento
Mohawk Data Sciences Corp
2717 Cottage Way
916-481-4705

CA Santa Ana
Mohawk Data Sciences Corp
1811 E Garry Ave
714-557-9610

CO Denver
Mohawk Data Sciences Corp
2755 S Locust St
303-758-6433

CT Wethersfield
Mohawk Data Sciences Corp
30 Jordan La
203-529-8665

CT Stamford
Mohawk Data Sciences Corp
1200 Summer St
203-356-1710

FL Miami
Mohawk Data Sciences Corp
8400 NW 52nd St
305-592-8410

FL Jacksonville
Mohawk Data Sciences Corp
7820 Arlington Expwy
904-721-3421

FL Tampa
Mohawk Data Sciences Corp
219 Mariner Sq
813-877-5771

FL Orlando
Mohawk Data Sciences Corp
723 E Colonial Dr
305-896-8240

GA Atlanta
Mohawk Data Sciences Corp
1945 The Exchange
404-952-2391

IL Oak Brook
Mohawk Data Sciences
2803 Butterfield Rd
312-654-8630

IL Des Plaines
Mohawk Data Sciences Corp
2200 E Devon Ave
312-654-8630

IL Peoria Heights
Mohawk Data Sciences Corp
1311 E Sciotia Ave
309-685-5957

IN Indianapolis
Mohawk Data Sciences Corp
2346 S Lynhurst Dr
317-243-7547

IN Ft Wayne
Mohawk Data Sciences Corp
2118 Inwood Dr
219-483-2186

IA	Des Moines Mohawk Data Sciences Corp 617 E Second St 515-288-8918	NY	Schenectady Mohawk Data Sciences Corp 2245 Central Ave 518-372-6411	TN	Nashville Mohawk Data Sciences Corp 1100 Kermit Dr 615-361-7333
IA	Cedar Rapids Mohawk Data Sciences Corp 206 Collins Rd NE 319-363-8225	NY	Snyder Mohawk Data Sciences Corp 3960 Harlem Rd 716-839-5200	TN	Memphis Mohawk Data Sciences Corp 2500 Mt Moriah Rd 901-795-7575
KS	Shawnee Mission Mohawk Data Sciences Corp 6405 Metcalfe Ave 913-262-5488	NY	Rochester Mohawk Data Sciences Corp 3255 Brighton 716-442-5720	TN	Knoxville Mohawk Data Sciences Corp 4611 S Central Ave Pike 615-689-5750
KY	Louisville Mohawk Data Sciences Corp Executive Park 502-897-3396	NY	Liverpool Mohawk Data Sciences Corp 7481 Henry Clay Blvd 315-457-3248	TX	Houston Mohawk Data Sciences Corp 4141 E Directors Row 713-681-6601
KY	Frankfort Mohawk Data Sciences Corp 164 & US 127 S 502-875-3644	NY	New York Mohawk Data Sciences Corp 50 Bway 212-422-8070	TX	Austin Mohawk Data Sciences Corp 314 W 11 St 512-349-3509
LA	Metairie Mohawk Data Sciences Corp 4900 Veterans Blvd 504-888-1711	NC	Charlotte Mohawk Data Sciences Corp 5601 Executive Center Dr 704-535-6450	TX	Dallas Mohawk Data Sciences Corp 2619 Electronic La 214-358-5391
MD	Baltimore Mohawk Data Sciences Corp 6999 Riestertown Rd 301-358-1038	NC	Raleigh Mohawk Data Sciences Corp 3810 Merton Dr 919-782-4184	TX	San Antonio Mohawk Data Sciences Corp 8026 Vantage Dr 512-349-3509
MA	Woburn Mohawk Data Sciences Corp 300 Unicorn Pk Dr 617-935-5772	NC	Greensboro Mohawk Data Sciences Corp 310 Friendship Ct Dr 919-852-0992	TX	Hurst Mohawk Data Sciences Corp 227 Northwest 817-589-0316
MI	Southfield Mohawk Data Sciences Corp 4000 Town Center 313-352-9160	OH	Akron Mohawk Data Sciences Corp 708 E Wilbeth Rd 216-762-7227	UT	Salt Lake City Mohawk Data Sciences Corp 530 Lawndale Dr 801-466-8668
MI	Grand Rapids Mohawk Data Sciences Corp 6115 28 St SE 616-942-9173	OH	Blue Ash Mohawk Data Sciences Corp 11315 Reed Hartman Hwy 513-984-5093	VA	Richmond Mohawk Data Sciences Corp 1604 Santa Rosa Rd 804-285-3467
MI	Lansing Mohawk Data Sciences Corp 304 S Waverly Rd 517-321-6091	OH	Cleveland Mohawk Data Sciences Corp 5755 Granger Rd 216-398-4700	VA	Virginia Beach Mohawk Data Sciences Corp 405 S Parliament Dr 804-499-2921
MI	Bridgeport Mohawk Data Sciences Corp 6264 Dixie Hwy 517-577-0920	OH	Worthington Mohawk Data Sciences Corp 6797 No High St 614-888-6527	VA	Roanoke Mohawk Data Sciences Corp Route 419 703-774-6336
MN	Bloomington Mohawk Data Sciences Corp 7801 Metro Pkwy 612-854-1141	OH	Toledo Mohawk Data Sciences Corp 310 S Reynolds Rd 419-531-8953	VA	Vienna Mohawk Data Sciences Corp 8300 Old Courthouse Rd 703-734-3212
MS	Jackson Mohawk Data Sciences Corp 1524 Hwy 80 W 615-355-8265	OK	Oklahoma City Mohawk Data Sciences Corp 1411 Classen Blvd 405-528-2706	WA	Bellevue Mohawk Data Sciences Corp 1715 114 SE 206-455-5995
MO	St Louis Mohawk Data Sciences Corp 12300 Olive St Rd 314-727-0175	OK	Tulsa Mohawk Data Sciences Corp 2651 E 21 St 918-749-1607	WI	Wauwatosa Mohawk Data Sciences Corp 9730 W Bluemond Rd 414-258-5620
NE	Omaha Mohawk Data Sciences Corp 7101 Mercy Rd 402-392-0690	OR	Tigard Mohawk Data Sciences Corp 7150 SW Hampton 503-620-4404	WI	Sun Prairie Mohawk Data Sciences Corp 240 E Main 608-271-9248
NE	Lincoln Mohawk Data Sciences Corp 521 So 14 St 402-474-4359	PA	Camphill Mohawk Data Sciences Corp 355 N 21 Street 215-245-4455	ONTARIO, CANADA	Markham, Ont MDS Canada 85 Idema Rd 416-495-6060
NJ	Springfield Mohawk Data Sciences Corp 11 Dundar Rd 201-467-9850	PA	Pittsburgh Mohawk Data Sciences Corp 1910 Cochran Rd 412-561-4700	BELGIUM	Brussels Mohawk Data Sciences Intl Service Corp Rue Decale 53 02513-4543
NJ	Mt Laurel Twp Mohawk Data Sciences Corp 303 Fellowship Rd 609-234-6400	SC	Greenville Mohawk Data Sciences Corp 37 Villa Rd 803-242-9167	ENGLAND	London SW 1 MDS Dip Ltd 50 Vauxhall Bridge Rd 44-1-874-6404
NY	New York Mohawk Data Sciences Corp 370 Lexington Ave 212-685-7713	SC	W Columbia Mohawk Data Sciences Corp 1101 Harbor Rd		

FRANCE

Paris
MDS France SA
197 Rue Je Bercy
33-1-345-4045

GERMANY, WEST

Menden
MDS Deutschland GmbH
Freidrich-Gauss-Strasse
49-2-241-1611

ITALY

Milan
MDS Italia SPA
Via Felice Casati 16
39-6-475-7520

NETHERLANDS

Amsterdam
MDS Nederland NV
Rijnsburgstraat 11
31-20-123-436

MOJAVE DATA SYSTEMS INC

7100 Hayvenhurst NE
Van Nuys, CA 91406
213-273-4336
Contact: Bertil Lindberg
■ Products & Services
Automatic answering units
Automatic calling units

Branch Sales Offices:

IL Chicago
Pivan Engineering Co
3535 W Petersen Ave
312-539-4838
TX Missouri City
Lynn Elliot Co
13753 Pike Rd
713-499-1571

MONOLITHIC SYSTEMS CORP

14 Inverness Dr E
Englewood, CO 80112
303-770-7400
Contact: Mike Hart
■ Products & Services
Minicomputers
Remote network processors
Add-on main memory
Tape punch/reader, paper

Branch Sales Offices:

CA Pasadena
Monolithic Systems Corp
1105 Daveric Dr
213-351-8717
CO Englewood
Monolithic Systems Corp
14 Inverness Dr E
303-770-7400
NJ Princeton
Monolithic Systems Corp
1101-B9 State Rd
609-921-2240

MORINO ASSOCIATES INC

8133 Leesburg Pike
Vienna, VA 22180
703-734-9494
Contact: Marketing Manager

MOSTEK CORP

1215 Crosby Rd
Carrollton, TX 75006
214-323-6000
■ Products & Services
Add-on main memory
Automatic answering units
Automatic calling units
Voice adapters
Voice digitizers

Branch Sales Offices:

AZ Phoenix
Mostek Corp
602-997-7573
CA Irvine
Mostek Corp
714-549-0397
CA San Jose
Mostek Corp
408-287-5081
CT Greenwich
Mostek Corp
203-622-0955
FL Tampa
Mostek Corp
813-876-1304
IL Roselle
Mostek Corp
312-529-3993
MI Livonia
Mostek Corp
313-478-1470
MN Minnetonka
Mostek Corp
612-935-4020
MS Woburn
Mostek Corp
617-935-0635
NJ Mt Laurel
Mostek Corp
609-235-4112
OH Miamisburg
Mostek Corp
513-866-3405
TX Dallas
Mostek Corp
214-386-9141

For further catalog information, turn to
UpDate Service Card, page 201.

MOTOROLA GOV'T ELECTRONICS DIV

Box 1417
Scottsdale, AZ 85252
602-949-3232
Contact: Vicki Crain
■ Products & Services
Data security devices, encoder/decoders
Data communications consultants

MOTOROLA SEMICONDUCTOR PROD

PO Box 20912
Phoenix, AZ 85036
602-244-6900
Contact: Bob Brown
■ Products & Services
Add-on main memory
Programmable terminals
Voice digitizers

Branch Sales Offices:

AL Huntsville
Motorola Semiconductor
205-533-1650
AL Huntsville
Pen-Tech Associates
205-881-9298
AZ Scottsdale
Motorola Semiconductor
602-994-6326
CA Encino
Motorola Semiconductor
213-986-6850
CA Orange
Motorola Semiconductor
714-634-2844
CA San Diego
Motorola Semiconductor
714-560-4644

CA San Jose
Motorola Semiconductor
408-985-0510
CA Carlsbad
Addem
714-268-8448
CA Carlsbad
Ed Landa Company
714-729-7267
CA Inglewood
Basic Systems Corp
213-673-4300
CA Los Angeles
Ed Landa Company
213-879-0770
CA Santa Clara
Basic Systems Corp
408-727-1800
CO Denver
Motorola Semiconductor
303-773-6800
CO Evergreen
Westek Data Products Inc
303-674-5255
CT New Haven
Motorola Semiconductor
203-281-0771
CT Hamden
J & J Associates
203-624-7800
FL Pompano Beach
Motorola Semiconductor
305-491-8141
FL Casselberry
Motorola Semiconductor
305-831-3422
FL St Petersburg
Motorola Semiconductor
813-576-6030
FL Deerfield Beach
Pen-Tech Associates
305-421-4989
FL Maitland
Pen-Tech Associates
305-645-3444
GA Atlanta
Motorola Semiconductor
404-256-0222
GA Marietta
Pen-Tech Associates
404-424-1931
IL Chicago
Motorola Semiconductor
312-576-7808
IL Chicago
First Rep Company
312-992-0830
IN Fort Wayne
Motorola Semiconductor
219-484-0436
IN Indianapolis
Motorola Semiconductor
317-849-7060
IN Indianapolis
Carter McCormick & Peirce
317-844-4175
IA Cedar Rapids
Motorola Semiconductor
319-377-9439
KS Kansas City
Motorola Semiconductor
913-384-3050
MD Bethesda
Powell-Pendergraph Inc
301-656-4335
MA Boston
Motorola Semiconductor
617-861-1350

MA	Winchester J & J Associates 617-729-5770	PA	Willow Grove Powell-Pendergraph Inc 215-657-0330	ENGLAND	Manchester Motorola Semiconductor 061-833-0731
MI	Detroit Motorola Semiconductor 313-261-6200	TN	Knoxville Motorola Semiconductor 615-690-5592	FRANCE	Paris Motorola Semiconductor 551-50-61
MI	Farmington Hills Carter McCormic & Peirce 313-477-7700	TX	Austin Motorola Semiconductor 512-452-7673	GERMANY, WEST	Langehagen Motorola Semiconductor 0511-78-20-37
MN	Minneapolis Motorola Semiconductor 612-545-0251	TX	Dallas Motorola Semiconductor 214-661-9829	GERMANY, WEST	Munich Motorola Semiconductor 089-95-1041
MN	Eden Prairie First Rep Company 612-944-2097	TX	Ft Worth Motorola Semiconductor 817-232-6255	GERMANY, WEST	Nurnberg Motorola Semiconductor 0911-65761
MO	St Louis Motorola Semiconductor 314-872-7681	TX	Houston Motorola Semiconductor 713-688-4583	GERMANY, WEST	Sindelfingen Motorola Semiconductor 07031-83074
NJ	River Edge Motorola Semiconductor 201-488-1200	TX	Austin Mycrosystmes Marketing Inc 512-452-2842	GERMANY, WEST	Wiesbaden Motorola Semiconductor 06121-76-1921
NY	Poughkeepsie Motorola Semiconductor 914-896-8970	TX	Dallas Mycrosystmes Marketing Inc 214-238-7157	HONG KONG	Hung Hom Motorola Semiconductor 3-630373-4
NY	Hauppauge Motorola Semiconductor 516-231-9000	TX	Houston Mycrosystmes Marketing Inc 713-783-2900	ISRAEL	Tel Aviv Motorola Semiconductor 03-38973
NY	Pittsford Motorola Semiconductor 716-248-5494	UT	Bountiful Anderson Associates 801-292-8991	ITALY	Bologna Motorola Semiconductor 266905
NY	Syracuse Motorola Semiconductor 315-454-9373	VA	Charlottesville Motorola Semiconductor 804-977-3691	ITALY	Milan Motorola Semiconductor 738-6141
NY	Elmont Crane & Egert Corp 516-488-2100	VA	Glen Allen Powell-Pendergraph Inc 804-264-2341	ITALY	Rome Motorola Semiconductor 83-147-46
NY	Fayetteville SF Foster 315-637-5427	WA	Bellevue Motorola Semiconductor 206-622-9960	JAPAN	Osaka Motorola Semiconductor 06-305-1241
NY	Webster SF Foster 716-265-2072	WA	Seattle ES Chase Company Inc 206-762-4284	JAPAN	Tokyo Motorola Semiconductor 03-440-3311
NC	Raleigh Motorola Semiconductor 919-782-7604	WI	Milwaukee Motorola Semiconductor 414-476-5554	MEXICO	Mexico DF Motorola Semiconductor 905-524-8191
NC	High Point Pen-Tech Associates 919-883-9125	WI	Milwaukee First Rep Company 414-546-2033	NETHERLANDS	Utrecht Motorola Semiconductor 0300-510207
OH	Cleveland Motorola Semiconductor 216-461-3160	MANITOBA, CANADA	Winnipeg Manitoba Motorola Semiconductor 204-889-0693	SINGAPORE	Singapore Motorola Semiconductor 294-5438
OH	Dayton Motorola Semiconductor 513-294-2231	ONTARIO, CANADA	Downsview Ont Motorola Semiconductor 416-661-6400	SOUTH AFRICA	Bramley Motorola Semiconductor 786-1184
OH	Columbus Motorola Semiconductor 614-846-9460	ONTARIO, CANADA	Montreal Que Motorola Semiconductor 514-731-6881	SWEDEN	Solna Motorola Semiconductor 08-82-02-95
OH	Cleveland Carter McCormic & Peirce 216-779-5100	ARGENTINA	Buenos Aires Motorola Semiconductor 46-9797	SWITZERLAND	Geneva Motorola Semiconductor 022-33-56-07
OH	Dayton Carter McCormic & Peirce 513-222-7700	AUSTRALIA	Sydney Motorola Semiconductor 438-1955-434-299		
OK	Tulsa Motorola Semiconductor 918-664-5227	BRAZIL	Sao Paulo Motorola Semiconductor 707-286		
OR	Portland Motorola Semiconductor 503-244-7593	DENMARK	Lyngby Motorola Semiconductor 01-88-44-55		
OR	Beaverton ES Chase Co Inc 503-641-4111	ENGLAND	Wembley Motorola Semiconductor 01-902-8836		
PA	Philadelphia Motorola Semiconductor 215-643-4500				
PA	Pittsburgh Carter McCormic & Peirce 412-372-4415				

SWITZERLAND

Zolikon
Motorola Semiconductor
051-65-56-56/07

TAIWAN

Taipei
Motorola Semiconductor
752-8944-9

MOXON INC

2222 Michelson Dr
Irvine, CA 92715
Contact: Barbara Collins

MPI

2099 West 2200 South
Salt Lake City, UT 84119
801-973-6053
Contact: Frank Irvin
■ Products & Services
Teleprinters, impact

Branch Sales Offices:

CA Los Angeles
Delta Mutual Sales
5318 McConnell Ave
213-391-0451

CO

Denver
PLS Assoc
7755 E Quincy Ave
303-773-1218

FL

Orlando
Gra Mar
3165 McCrory Pl
305-894-3351

IL

Des Plaines
Coombs Assoc
1001 E Touhy Ave
312-298-4830

MD

Silver Spring
Marktron
13975 Connecticut Ave
301-460-6100

MA

Lynnfield
Grady & Assoc
18 Cortland La
617-334-6633

MN

Minneapolis
Bohlig & Assoc
3440 Belt Line Blvd
612-922-7011

NJ

Fort Lee
Hansen & Hughes
2175 LeMoine Ave
201-652-7055

OH

Centerville
EMA
35 Compark Rd
513-433-2800

TX

Dallas
Mycrosystems Marketing
13777 N Central Expwy
214-238-7157

MSI DATA CORP

340 Fisher Ave
Costa Mesa, CA 92626
714-549-6000
Contact: A E Easterlin
■ Products & Services
Minicomputers
Acoustic couplers
Bar code readers
Batch terminals
Portable data entry terminals
Computer/communications interfaces
Data access arrangement devices
Protocol converters
Uninterruptible power supplies, line correctors, etc

Data communications software, intelligent terminal vendors
Maintenance organizations

Branch Sales Offices:

CA Walnut Creek
MSI Data Corp
1910 Olympic Blvd
415-944-0550

GA

Atlanta
MSI Data Corp
300 Wendell Ct
404-691-7207

IL

Rolling Meadows
MSI Data Corp
1931 Rohlwing Rd
312-392-8300

MA

Braintree
MSI Data Corp
222 Forbes Rd
617-848-6450

TX

Garland
MSI Data Corp
1916 Pendleton Dr
214-270-6721

MSP INC

21 Worthen Rd
Lexington, MA 02173
617-861-6130
Contact: David Da Costa
■ Products & Services
Data security devices, software security modules
Data communications software, independent software houses

MTI SALES CORP

159 Northern Blvd
Great Neck, NY 11021
516-482-3500
Contact: Len Buchholtz
■ Products & Services
Minicomputers
Modem sharing units
Multiplexers, frequency division
Acoustic couplers
Modems, limited distance
Modems, multiport
Modems, voice-grade, low-speed (0-1,200 b/s)
Modems, voice-grade, medium speed (1,800-3,600 b/s)
Modems, voice-grade, high-speed (4,800-9,600 b/s)
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Tape drives, magnetic
Programmable terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

OH Beachwood
MTI Systems
24000 Mercantile
216-464-6688

PA

Philadelphia
Rohr Assoc
7902 Louise Ln
215-836-2200

MUIRHEAD INC

1101 Bristol Rd
Mountainside, NJ 07092
201-233-6010
Contact: Elaine Dompieri
■ Products & Services
Facsimile-service carriers
EIA cable testers
Facsimile terminals
Computer/communications interfaces
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

ONTARIO, CANADA

Rexdale
Muirhead Systems
50 Galaxy Rd
416-675-7450

ENGLAND

Beckenham, Kent
Muirhead Ltd
01-650-4888

MULTI-TECH SYSTEMS INC

82 Second Ave SE
New Brighton, MN 55112
612-631-3550
Advertising pages 58-59
Contact: Thomas Heimerman
■ Products & Services
Acoustic couplers
Modems, multipoint
Modems, voice-grade, low-speed (0-1,200 b/s)
Modems, voice-grade, medium speed (1,800-3,600 b/s)
Data content monitors
EIA cable testers
Error rate detectors
Data access arrangement devices
Switches, data communications, manual

Branch Sales Offices:

CA Northridge
Dayton-Forester Assoc
19365 Business Ctr Dr
213-701-0127

CA Sunnyvale
Inter-Link Systems
580 Weddell Dr
408-744-1930

CO Littleton
Dapec Inc
5575 S Sycamore
303-798-6538

FL Boca Raton
James L Highsmith & Co
4190 NW Oak Circle
305-368-9194

HI Kailua
Gray Assoc
1269 Maleko
808-261-3751

IL Westmont
Telcom Products
107 W 61 St
312-960-4090

KS Shawnee Mission
Inland Assoc
7975 W 63 St
913-362-2366

MD Gaithersburg
Computer Terminal Sales
615 So Frederick
301-840-9270

MA Wakefield
IMF Sales Assoc
12 Lakeside Office Pk
617-245-8900

- MI** Brighton
Dacoterm Inc
11365 Culver Rd
313-453-7250
- MN** Brooklyn Park
Tele-Terminals Inc
7216 Boone Av N
612-535-5330
- MN** Minneapolis
Loonam Assoc Inc
7720 Bush Lake Rd
612-831-1616
- MO** St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742
- NJ** Roselle
TSC Data Terminals
155 E 1st Av
201-245-6333
- NY** Penfield
Western NY Computing
2129 Five Mile Line Rd
716-381-4120
- NC** Charlotte
J L Highsmith & Co
1141 Hawthorne LN
704-333-7743
- OR** Portland
C & L Terminals
1215 SE Ivon
503-231-0333
- TX** Dallas
Peripheral Marketing
7616 LBJ Fwy
214-980-7432
- UT** Salt Lake City
Terminal Specialties Inc
3999 S Main St
801-262-7100
- VA** Richmond
J L Highsmith & Co
2604 D Buford Rd
804-272-5888
- WA** Bellevue
C & L Terminals
13500 Bel-Red Rd
206-641-6820
- ONTARIO, CANADA**
Ottawa
Allcom Data Ltd
5A Caesar Ave
613-226-2340
- Timesharing/service bureaus**
Branch Sales Offices:
CA San Francisco
National Data Corp
180 Howard St
415-981-4450
- DC** Washington
National Data Corp
918 16 St NW
202-233-6503
- GA** Atlanta
National Data Corp
One National Data Plaza
404-329-8500
- IL** Lombard
National Data Corp
55 W 22nd St
312-343-9400
- MA** Boston
National Data Corp
100 Franklin St
617-426-4703
- NY** New York
National Data Corp
1185 Ave of the Americas; Rm 2530
212-730-7844
- NY** New York
Interactive Services Corp
19 W 44 St
212-869-9170
- OR** Portland
National Data Corp
200 Market Bldg
503-223-7687
- PA** Pittsburgh
National Data Corp
100 Fleet St
412-921-4400
- SC** Charleston
National Data Corp
205 King St
803-722-2257
- ONTARIO, CANADA**
Don Mills ON
National Data Corp
1480 Don Mills Rd
416-445-7151
- NATIONAL ELECTRIC CABLE**
16566 W 72nd St
Portland, OR 97223
503-620-9400
Contact: Harry Reeb
■ Products & Services
EIA cable testers
Cables, electrical prefabricated extending
Cables, lightwave (optical fiber)
Computer/communications interfaces
Data jacks and plugs
Branch Sales Offices:
CO Lakewood
National Electric Cable
9150 Jewell
303-989-7200
- TX** Houston
National Electric Cable
1400 West Belt N
713-464-8555
- NBI INC**
1695 38th St
Boulder, CO 80301
303-444-5710
Contact: J David Pollard
■ Products & Services
Word processors, communicating
- Branch Sales Offices:**
AK Anchorage
Yukon Office Supply Inc
3150 C St
907-276-5088
- AK** Juneau
Yukon Office Supply Inc
800 Glacier Ave
907-586-6060
- AZ** Phoenix
Hughes Calihan Corp
4730 N 16th St
602-264-9631
- AZ** Tucson
Hughes Calihan Corp
415 E University
602-623-0351
- AR** Little Rock
City Business Machines Inc
6800 Interstate 30
501-568-4044
- AR** Dallas
Exeter Corp
4250 Spring Valley Rd
214-661-8887
- CA** Los Angeles
NBI Inc
2049 Century Pk E
213-277-6441
- CA** Irvine
NBI Inc
2101 Business Center Dr
714-851-1955
- CA** San Francisco
NBI Inc
50 California St
415-421-9229
- CA** San Jose
NBI Inc
4040 Moorpark Ave
408-985-8774
- CA** Burlingame
NBI Inc
500 Airport Blvd
415-348-3794
- CA** Sacramento
Sacramento Bus Systems Inc
1451 Riverpark Dr
916-920-1165
- CA** San Diego
BOS Systems Corp
9471 Ridgehaven Ct
714-569-0201
- CO** Boulder
NBI Inc
1695 38th St
303-444-5710
- CO** Denver
NBI Inc
1250 14th St
303-825-8403
- DE** Wilmington
Word Systems Inc
One Customs House Sq
302-655-4416
- DC** Washington
NBI Inc
1111 19th St NW
202-293-1625
- FL** Jacksonville
Enfields
1063 Haines St
904-355-4721
- FL** Miami
Enfields
4000 NW 30th Ave
305-633-1551

Products are listed alphabetically in the **Products & Services Directory**, page 5

NATIONAL CSS
187 Danbury Rd
Wilton, CT 06897
203-762-2511
Contact: Bernie Cohen
■ Products & Services
Data communications consultants
Timesharing/service bureaus

NATIONAL DATA CORP
1 National Data Plaza
Atlanta, GA 30329
404-329-8500
Contact: C W Leizear
■ Products & Services
Front-end processors
Modem sharing units
Multiplexers, group band
Data communications software, distributed
data processing system vendors
Maintenance organizations

GA	Atlanta NBI Inc 5 Piedmont Center 404-233-7001	OK	Oklahoma City Commercial Business Equip 7420 N Broadway 405-848-5570	Selection & transfer equipment, reconfiguration equipment Switches, data communications, manual Data communications software, communications processors vendors Maintenance organizations
IL	Des Plaines NBI Inc 1011 East Touhy Ave 312-298-3700	OR	Eugene Business Equip Sales Inc 943 W Seventh Ave 503-683-3182	Branch Sales Offices:
IL	Chicago NBI Inc 111 E Wacker Dr 312-861-1140	OR	Portland Business Equip Sales Inc 310 SW 4th Ave 503-227-3676	CA Westminister Comten Inc 14340 Bolsa Chica Rd 714-893-3561
IL	Des Plaines NBI Inc 999 E Touhy Ave 312-635-6731	PA	Conshohocken Word Systems Inc 151 E Tenth 215-828-8422	CA Santa Monica Comten Inc 225 Santa Monica Blvd 213-451-5412
IL	Peoria The Office Design Inc 7411 N University 309-691-5350	PA	Bala Cynwyd Word Systems Inc One Bala Cynwyd Plaza 215-667-9680	CA San Mateo Comten Inc 1700 S Amphlett Blvd 415-349-1612
LA	Shreveport Smith Office Machines 403-05 Lake St 318-222-8363	PA	Pittsburgh Multiscope Inc 100 Fifth Ave Bldg 412-456-1050	CA Los Angeles Comten Inc 9841 Airport Blvd 213-641-4390
MD	Baltimore NBI Inc 36 S Charles St 301-727-8200	TX	Houston NBI Inc 2727 Allen Parkway 713-522-3332	CO Lakewood Comten Inc 44 Union Blvd 303-985-9008
MA	Waltham Spaulding Co Inc 1560 Trapelo Rd 617-890-7337	TX	Sherman Texoma Business Machines 120 W Mulberry 214-892-2144	CT W Hartford Comten Inc 1 Financial Plaza 203-527-4326
MI	Birmingham Resource Data Systems Corp 30600 Telegraph Rd 313-645-6570	TX	El Paso Business Forms Inc 2514 E Yandell 915-533-4241	FL Orlando Comten Inc 6900 S Orange Blossom Trail 305-859-9395
MN	Edina NBI Inc 6600 France Ave S 612-922-1000	UT	Salt Lake City NBI Inc 370 E South Temple 801-364-8571	GA Marietta Comten Inc 2480 Windy Hill Rd 404-952-0200
MS	Jackson Infosystems 856 Foley St 601-355-5180	VA	Rosslyn NBI Inc 1117 N 19th St 703-522-6515	IL Lombard Comten Inc 477 E Butterfield Rd 312-969-9100
MO	Kansas City Electronic Bus Equip Inc 1500 Grand Ave 816-221-6400	VA	Virginia Beach Info Proc Consultants Inc 116 Birchwood Park Dr	MD Rockville Comten Inc 3 Choke Cherry Rd 301-948-8000
MO	St Louis Da-Com Corp 1601 Washington Ave 314-436-2800	WI	Madison Gordon Flesch Co Inc 2101 W Beltline Hwy 608-271-2100	MA Waltham Comten Inc 400 Totten Pond Rd 617-890-1414
NJ	Paramus NBI Inc Route 17 & Century Rd 201-262-0420	WI	Brookfield Gordon Flesch Co 3725A N 126th St 414-783-7000	MI Southfield Comten Inc 20100 Civic Center Dr 313-353-3660
NM	Albuquerque New Mexico Word Processing 2401 Wisconsin NE 505-293-4733	NCR COMTEN INC 1950 W County Rd St Paul, MN 55113 612-633-8130 Contact: Edward J Clark ■ Products & Services Concentrators Front-end processors Message switchers Modem sharing units Multiplexers, statistical (intelligent) Remote network processors Modems, limited distance Modems, voice-grade, low-speed (0-1,200 b/s) Modems, voice-grade, medium speed (1,800-3,600 b/s) Disc drives, large Tape drives, magnetic Batch terminals Remote line printers Remote job entry terminals Teleprinters, impact Automatic calling units		MO St Louis Comten Inc 2388 Schuetz Rd 314-569-3020
NY	New York NBI Inc 575 Madison Ave 212-486-0946			NJ Medford Comten Inc Tauton Blvd 609-654-5133
NC	Charlotte Cavin's Bus Products Inc 108 E Morehead St 704-334-1628			NY New York City Comten Inc 300 E 42 St 212-599-4450
NC	Fayetteville Cavin's Bus Prod Inc 724 Hay St 919-485-5151			NY Elmsford Comten Inc 33 W Tarrytown Rd 914-592-5709
OH	Columbus Gordon Flesch Co 4255 Dipolmacy Dr 614-876-1174			OH Columbus Comten Inc 1630 NW Professional Plaza 614-457-5870
OH	Dayton J M Woodhull Inc 719 S Main St 513-461-5734			OH Cincinnati Comten Inc 415 Glenspring Dr 513-851-5500

PA Bal Cynwyd
Comten Inc
1 Bala Cynwyd Plaza
215-667-1065

PA Pittsburgh
Comten Inc
Two Oliver Plaza
412-391-8270

TX Dallas
Comten Inc
13601 Preston Rd
214-233-7000

TX Houston
Comten Inc
4151 SW Freeway
713-961-4111

WA Bellevue
Comten Inc
10655 NE 4 Ave
206-454-5072

ONTARIO, CANADA
Toronto
Comten Inc
505 Consumers Rd
416-496-1300

ENGLAND
London
Comten Inc
23/24 Great James St
01-405-0085

NCR CORP
Dayton, OH 45479
513-449-2000
Contact: D M Peck
■ Products & Services
Concentrators
Front-end processors
Message switchers
Packet processors
Remote network processors
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modem eliminators
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Tape drives, magnetic
Tape punch/reader, paper
Badge readers
Bar code readers
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, non-impact
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Data access arrangement devices
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors

Lease and resale organizations
Maintenance organizations
Timesharing/service bureaus

NEC AMERICA INC
277 Park Ave.
New York, NY 10017
212-888-0700
Contact: Dennis Anderson
■ Products & Services
Facsimile terminals
Word recognition units
Branch Sales Offices:
CA Santa Clara
Nec America Inc
3120 Central Expwy
408-727-8082
NY New York
Nec America Inc
277 Park Ave
212-888-0700
TX Houston
Nec America Inc
11777 Katy Frwy
713-870-1065

Get new product information when it
breaks?
Turn to **UpDate Service Card, page
201.**

NEC INFORMATION SYSTEMS INC
5 Militia Dr
Lexington, MA 02173
617-862-3120
Advertising page 6
Contact: Jack Flynn
■ Products & Services
DDP systems
Local network systems
Disc drives, floppy
Disc drives, large
Programmable terminals
Interactive terminals
Remote line printers
Teleprinters, impact
Teletypewriters
Ribbons and supplies for terminals and
printers

Branch Sales Offices:
AL Huntsville
W A Brown Instruments
Box 4560
205-883-8660
AK Anchorage
Scientific Business Systems
800 E Diamond Blvd
907-344-8352
AZ Phoenix
Terminal Rentals
2430 S 20 St
602-258-4466
AZ Scottsdale
Thorson Desert States
6560 N Scottsdale
602-998-2444
CA Tustin
Electronic Mktg Specialists
2600 Walnut #A
714-832-9920
CA Sunnyvale
Electronic Mktg Specialists
599 N Mathilda Ave
408-245-9291
CA Sherman Oaks
Electronic Mktg Specialists
13837 Ventura Blvd #6
213-990-4244

CA San Diego
Electronic Mktg Specialists
12797 Calma Ct
714-560-5133

CA Tustin
Terminal Rentals
1542 A Moulton Pkwy
714-832-2414

CO Englewood
Thorson Rocky Mountain
7076 S Alton Way
303-779-0666

FL Orlando
W A Brown Instruments
22 Weber Ave
305-425-5505

FL Ft Lauderdale
W A Brown Instruments
961 NW 53 St
305-776-4800

FL Melbourne
W A Brown Instruments
Box 1406
305-723-0766

FL Tallahassee
W A Brown Instruments
1325 E Tennessee St
904-878-6642

GA Atlanta
W A Brown Instruments
3070 Presidential Dr
404-455-1035

HI Honolulu
Gray Assoc
691 Kalanipuu
808-261-3751

ID Boise
Byte Shop of Northwest
418 N Orchard
208-345-3811

IL Arlington Heights
Dytec/Central
121 S Wilke Rd
312-394-3380

IL Rosemont
Information Systems
9806 W Farragut
312-671-7780

IL Northbrook
The Jed Group Ltd
1935 Shermer Rd
312-291-1171

IN Indianapolis
Dytec/Central
25 Beachway Dr
317-247-1316

KS Shawnee Mission
Inland Assoc
7975 W 63 St
913-362-2366

KY Lexington
Lowry & Assoc
205 E Reynolds Rd
606-273-3772

LA Mandeville
W A Brown Instruments
Box 786
504-626-9701

MD Bethesda
Bartlett Assoc
4405 East-West Hwy
301-656-3061

MA Framingham
Bartlett Assoc
150 Speen St
617-879-7530

MI Brighton
Lowry & Assoc
135 W N St
313-227-7067

NET

MI Grand Rapids
Lowry & Assoc
3902 Costa NE
616-363-9839

MI Madison Heights
WKM Assoc
345 W Girard St
313-588-2300

MN St Paul
Dytec/North
1821 University Ave
612-645-5816

MO St Louis
Inland Assoc
13100 Manchester St
314-821-3742

NV Las Vegas
The Computer Co
1850 Sahara Ave
702-732-2520

NJ Cherry Hill
Datastore
2428 Rt 38
609-779-0200

NJ Ft Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911

NM Albuquerque
Total Business Systems
4801 Indian School NE
505-265-3511

NY White Plains
Bartlett Assoc
470 Mamoroneck Ave
914-949-6476

NY Holcomb
Bartlett Assoc
Box 125
716-657-6309

NY E Syracuse
Ossman Instruments
6666 Old Collamer Rd
315-437-6666

NY Rochester
Ossman Instruments
130 Allen's Creek Rd
716-473-5720

NY Vestal
Ossman Instruments
1901 Vestal Pkwy E
607-785-9947

OH Dayton
Lowry & Assoc
1524 Marsetta Dr
513-429-9040

OH Cleveland
Lowry & Assoc
1440 Snow Rd
216-398-0506

OH Columbus
Lowry & Assoc
1050 Freeway Dr N
614-436-2051

OH Dayton
WKM Assoc
7913 S Suburban Rd
513-434-7500

OH Cleveland
WKM Assoc
16141 Puritas Ave
216-267-0445

OR Portland
Byte Shop of Northwest
2033 SW 4 Ave
503-223-3496

OR Beaverton
Byte Shop of Northwest
3482 SW Cedar Hill Blvd
503-644-2686

PA Wayne
Bartlett Assoc
Box 72
215-688-7325

PA Pittsburgh
Lowry & Assoc
7 Parkway Center
412-922-5110

PA Pittsburgh
WKM Assoc
90 Clairton Blvd
412-892-2953

SC Columbia
W A Brown Instruments
1201 St Andrews Rd
803-798-8070

SC Durham
W A Brown Instruments
123½ Orange St
919-682-2383

TN Oak Ridge
W A Brown Instruments
733 Emory Valley Rd
615-482-5761

TX Richardson
Data Applications
1300 E Arapho Rd
214-231-4846

TX Houston
Data Applications
5401 Micheldale
713-686-8413

TX San Antonio
Data Applications
4538 Center View
512-732-7176

UT Salt Lake City
Thorson Rocky Mountain
3691 W 1987 S
801-973-7969

VA Arlington
Terminals Unltd
1008 N Randolph St
703-525-6307

WA Seattle
Byte Shop of Northwest
2605 2 Ave
206-622-7196

WA Bellevue
Byte Shop of Northwest
14701 NE 20
206-746-0651

WA Lynwood
Byte Shop of Northwest
20101 44 Ave W
206-775-7436

ONTARIO, CANADA
Toronto
Zentronics Inc
1355 Myerside Dr
416-676-9000

NETWORK ANALYSIS CORP
130 Steamboat Rd
Great Neck, NY 11024
516-829-5900
Contact: Norman Brust
■ Products & Services
Data communications consultants
Educational services
Network simulation services
Branch Sales Offices:

NY Great Neck
Network Analysis Corp
130 Steamboat Rd
516-829-5900

VA Vienna
Network Analysis Corp
301 Tower Bldg
703-281-7440

ENGLAND
London
PACTEL
33 Greycoat St
01-828-6374

NETWORK SYSTEMS CORP
7600 Boone Ave N
Brooklyn Pk, MN 55428
612-566-5050
Contact: Mahlon L Moore
■ Products & Services
Local network systems
Computer/communications interfaces

Branch Sales Offices:
AL Huntsville
Network Systems Corp
500 Lowell Dr
205-539-7929

CA San Mateo
Network Systems Corp
1611 Borel Pl
415-572-0331

CA Santa Fe Springs
Network Systems Corp
12631 E Imperial Hwy
213-863-4856

IL Oak Brook
Network Systems Corp
2625 Butterfield Rd
312-323-6240

MA Braintree
Network Systems Corp
14 Wood Rd
617-843-6562

MI Southfield
Network Systems Corp
29551 Greenfield Av
313-569-1801

NJ Paramus
Network Systems Corp
15 Prospect St
201-368-8024

PA Blue Bell
Network Systems Corp
1777 Walton Rd
215-542-8039

TX Irving
Network Systems Corp
700 Airport Frwy W
214-438-6464

TX Dallas
Network Systems Corp
1309 W 15th St
214-424-2907

VA Vienna
Network Systems Corp
513 W Maple Ave
703-281-0455

AUSTRALIA
Milsons Point
Karnang Pty Ltd
61 Lavender St
920858

FRANCE
Paris 15
Tesdata SA
104 Rue Castagnary
01-533-7300

NEW ENGLAND TELEPHONE & TELEGRAPH CO
185 Franklin St
Boston, MA 02107
Contact: W F Davis
■ Products & Services
Digital service units
Modems, limited distance
Modems, multipoint

Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Data entry terminals
Interactive terminals
Teleprinters
Teletypewriters
Video data terminals (KSR)
Automatic calling units
Data communications consultants

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

NEW JERSEY BELL TELEPHONE CO

540 Broad St
Newark, NJ 07101
201-649-2032
Contact: W Richards
■ Products & Services
Facsimile-service carriers
Message (including telegraph) carriers
Telephone companies
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Data entry terminals
Interactive terminals
Remote line printers
Teleprinters
Teleprinters, impact
Terminal controllers
Video data terminals (KSR)
Automatic answering units
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Data communications consultants
Maintenance organizations

NEWPORT DATA INC

PO Box 750
Newport, RI 02840
401-849-5960
Contact: Ernie Dorazio

Branch Sales Offices:

CA El Granda
DCM Associates
Box 1192
415-726-6326
NJ Livingston
Star Technical Sales
Box 154
201-992-STAR
OH Cleveland
Arc Associates
21360 Center Ridge Rd
216-871-0381
ONTARIO, CANADA
Downsview
Electronic Systems Ltd
62 Alness St
416-661-3673

NICOLET ZETA CORP

PO Box 4003
Concord, CA 94524
415-671-0600
Contact: Gary Hasenfus
■ Products & Services
Digital plotters

Branch Sales Offices:

ONTARIO, CANADA
Mississauga
Nicolet Instruments Canada Ltd
1-1200 Aerowood Dr
416-625-8302

AUSTRALIA

St Leonards, NSW
Electronic Assoc Pty
48 Atchison Str
439-7522

BELGIUM

1420 Braine L'Allued
MCR Electronics Marketing SPRI
Chausse de Nivelles, 100
02/384 80 62

CHILE

Santiago
Sistemas de Computacion SA
Jose M Infante 50
462041

ENGLAND

Warwick
Nicolet Instrument Ltd
Budbrooke Rd
0926-44111

FRANCE

Sevres
Tekelec Airtronic
Rue Carle Vernet
1-027-75-35

GERMANY, WEST

Frankfurt
Nicolet Instrument GmbH
6050 Offenbach Main
0611/812075

ISRAEL

Ramat-Gan
Morav Technology Ltd
28 Arlazorov St
730938, 735790

JAPAN

Osaka
Nicolet Japan Corp
8-7-6 Chome; Nishi-Nakajima
06-305-2150

NETHERLANDS

The Hague
Repko b.v.
Box 63439
070-46508

REPUBLIC OF CHINA

Taipei
ComputeK Inc
11, Alley 19, Lane 216 Chung
Hsiao East Road, Sec 4
02-721-2203

SOUTH AFRICA

Johannesburg 2000
Spescom
Box 6270
834-7551

SPAIN

Madrid
Eset sa
Columbia 62

SWEDEN

Farsta
Tel Inter AB
Forslagagatan 58
08/940490

SWITZERLAND

CH-8810 Horgen 1
Comptronix AG
Drusvergstrasse
01-725-04-10

NIXDORF COMPUTER CORP

168 Middlesex Turnpike
Burlington, MA 01803
617-273-0480
Contact: John Kells
■ Products & Services
DDP systems
Word processors, communicating
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

AZ Birmingham
Nixdorf Computer Corp
165 West Valley Ave
205-942-6416
CA Los Angeles
Nixdorf Computer Corp
Century City N Bldg; 10100 Santa
Monica Blvd
213-879-2034
CA Los Angeles
Nixdorf Computer Corp
4311 Wilshire Blvd
213-937-5700
CA San Mateo
Nixdorf Computer Corp
1670 Amphlett Blvd
415-574-7334
CA San Diego
Nixdorf Computer Corp
4710 Ruffner St
714-565-9604
CO Denver
Nixdorf Computer Corp
2460 W 26 Ave
303-455-3282
CT Wethersfield
Nixdorf Computer Corp
465 Silas Deane Hwy
203-563-9053
FL Miami
Nixdorf Computer Corp
1405 NW 167 St
305-620-9022
FL Altamonte Springs
Nixdorf Computer Corp
435 Whooping Loop
305-339-6100
FL Tampa
Nixdorf Computer Corp
5420 Bay Center Dr
813-879-2305
FL Jacksonville
Nixdorf Computer Corp
7825 Baymeadows Way
904-737-7344
GA Atlanta
Nixdorf Computer Corp
1800 Century Blvd NE
404-325-8300
GA Atlanta
Nixdorf Computer Corp
1790 Century Cir
404-325-2250
IL Chicago
Nixdorf Computer Corp
20 N Wacker Dr
312-782-5681
IL Chicago
Nixdorf Computer Corp
5725 E River Rd
312-693-7320
IL Chicago
Nixdorf Computer Corp
20 N Wacker Dr
312-782-5682
IL Springfield
Nixdorf Computer Corp
100 W Cook St
217-789-7709

IN Indianapolis
Nixdorf Computer Corp
2421 Production Dr
317-241-8661

MD Linthicum
Nixdorf Computer Corp
793 Elkridge Landing Rd
301-796-3780

MA Wellesley
Nixdorf Computer Corp
888 Worcester St
617-235-8710

MI Southfield
Nixdorf Computer Corp
23777 Southfield Rd
313-569-2525

MN Minneapolis
Nixdorf Computer Corp
Southdale Office Center; 6700
France Ave S-Suite 150
612-929-0341

MO Maryland Heights
Nixdorf Computer Corp
100 Progress Pkwy
314-878-0636

MO Kansas City
Nixdorf Computer Corp
3100 South Broadway; Penn Tower
Office Center
816-531-1931

NJ Bloomfield
Nixdorf Computer Corp
400 Broadacres Dr
201-338-1700

NY New York
Nixdorf Computer Corp
1 Penn Plaza
212-977-2660

NY New Hyde Park
Nixdorf Computer Corp
3003 New Hyde Park Rd
516-328-1700

NC Charlotte
Nixdorf Computer Corp
2 Woodlawn Green
704-525-5281

OH Cleveland
Nixdorf Computer Corp
5755 Granger Rd
216-398-9210

OH Columbus
Nixdorf Computer Corp
5300 E Main St
614-861-4280

OH Cincinnati
Nixdorf Computer Corp
4000 Executive Park Dr
513-563-8943

PA Ft Washington
Nixdorf Computer Corp
510 Pennsylvania Ave
215-542-9292

PA Pittsburgh
Nixdorf Computer Corp
Two Gateway Center
412-391-8686

TN Chattanooga
Nixdorf Computer Corp
6200 Building-East Gate Center
615-892-1302

TN Nashville
Nixdorf Computer Corp
2500 21st Ave
615-383-0610

TX Houston
Nixdorf Computer Corp
2425 Fountain View Dr
713-621-3560

TX Dallas
Nixdorf Computer Corp
1250 W Mockingbird La
214-630-3343

WI Brookfield
Nixdorf Computer Corp
250 Bishops Way
414-786-9250

WI Madison
Nixdorf Computer Corp
955 W Broadway
608-221-4264

ALBERTA, CANADA
Calgary
Elan Data Makers Ltd
606 4 St SW
403-232-1661

NEWFOUNDLAND, CANADA
St Johns
Beothuk Data Systems Ltd
Box 9310 Station B
709-753-3333

ONTARIO, CANADA
Willowdale
Nixdorf Canada Ltd
505 Consumers Rd
416-498-7200

QUEBEC, CANADA
Montreal
Informec Registered
1420 Sherbrook St W
514-288-6422

JAPAN
Tokyo
Marubeni Electronics
16-16 Toranomon 1 Chome;
Minato-Ku
03-490-1351

PHILIPPINES
Manila
Suma Computer Sue Corp
De la Rosa & Salcedo Sts
85-42-36

VENEZUELA
Caracas
Ingedigit CA
Edif EXA #702; Avilbertador
32 68 64

NORTHERN TELECOM INC
NORTHEAST ELECTRONICS DIV
Airport Rd
Concord, NH 03301
603-224-6511
Contact: Don Larson
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

CA Mountain View
Northern Telecom
643 Escuela Av
415-964-4818

IL Aurora
Northern Telecom
18 N Anderson
603-224-6511

IN Carmel
Northern Telecom
4646 Royal Oak La
603-224-6511

IA Des Moines
Northern Telecom
1812 56 St
603-224-6511

NH Concord
Northern Telecom
Box 649
603-224-6511

NY Mallory
Northern Telecom
Box 7
603-224-6511

NC Carthage
Northern Telecom
Route 3, Wedgewood
603-224-6511

PA Newton
Northern Telecom
Box 542
603-224-6511

TN Blountville
Northern Telecom
Box 275A
603-224-6511

TX Mt Pleasant
Northern Telecom
Box 180
603-224-6511

ALBERTA, CANADA
Edmonton
NEDCO
403-425-1510

ENGLAND
Chepstow, Gwent
Northern Telecom
High Street
2912-5614

FRANCE
Dollard des Ormeaux
Northern Telecom
12 Montclair
514-620-3257

NORTHERN TELECOM SYSTEMS CORP
PO Box 1222
Minneapolis, MN 55440
612-932-8000
Contact: Byron Helgeson
■ Products & Services
Computerized branch exchange (CBX)
Minicomputers
DDP systems
Local network systems
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Terminal controllers

Branch Sales Offices:

AZ Phoenix
Northern Telecom Systems Corp
10030 N 25th Dr
602-861-1311

CA Los Angeles
Northern Telecom Systems Corp
9800 S Sepulveda Blvd
213-645-4300

CA Sacramento
Northern Telecom Systems Corp
2277 Fair Oaks Blvd
916-920-3759

CA San Francisco
Northern Telecom Systems Corp
201 California St
415-392-4000

CA San Mateo
Northern Telecom Systems Corp
2655 Campton Dr
415-349-6626

CA Newport Beach
Northern Telecom Systems Corp
1420 Bristol St N
714-955-2850

CO Englewood
Northern Telecom Systems Corp
8475 E Orchard Rd
303-770-3990

- CT Wethersfield
Northern Telecom Systems Corp
936 Silas Deane Hwy
203-721-0011
- FL Winter Park
Northern Telecom Systems Corp
1177 Louisiana Ave
305-645-0300
- GA Atlanta
Northern Telecom Systems Corp
2951 Flowers Rd
404-452-0020
- IL Mt Prospect
Northern Telecom Systems Corp
1699 Wall St
312-981-3700
- IN Indianapolis
Northern Telecom Systems Corp
400 E Southport Rd
317-788-1577
- IA Clive
Northern Telecom Systems Corp
8564 Alice Ave
515-276-4925
- KS Kansas City
Northern Telecom Systems Corp
1575 N Universal Ave
816-241-5040
- KY Louisville
Northern Telecom Systems Corp
2210 Goldsmith Ln
502-456-6655
- MA Waltham
Northern Telecom Systems Corp
303 Wyman St
617-890-7290
- MI Grand Rapids
Northern Telecom Systems Corp
3040 Charlevoix Dr SE
616-942-7700
- MI Southfield
Northern Telecom Systems Corp
21411 Civic Center
313-358-0065
- MN Minneapolis
Northern Telecom Systems Corp
Box 1338
612-932-8555
- MO St Louis
Northern Telecom Systems Corp
1810 Craig Rd
314-878-4911
- NJ Cherry Hill
Northern Telecom Systems Corp
#3 Cherry Hill Exec Campus
609-665-2590
- NJ Marlton
Northern Telecom Systems Corp
Greentree Exec Campus Rt 73
609-983-8004
- NJ Woodbridge
Northern Telecom Systems Corp
1000 Rt 9 N Sutton Pl
201-634-7800
- NY New York
Northern Telecom Systems Corp
One Penn Plaza
212-947-8500
- NC Charlotte
Northern Telecom Systems Corp
5601 77 Center Dr
704-525-5500
- OH Cincinnati
Northern Telecom Systems Corp
4700 Ashwood Dr
513-984-0902
- OH Columbus
Northern Telecom Systems Corp
2021 E Dublin Granville Rd
614-888-8655
- OH Cleveland
Northern Telecom Systems Corp
666 Independence Towers
216-742-4840
- OK Tulsa
Northern Telecom Systems Corp
9920 E 42nd St
918-665-3372
- OR Portland
Northern Telecom Systems Corp
9500 SW Barbur Blvd
503-245-2426
- PA Pittsburgh
Northern Telecom Systems Corp
200 Fleet St
412-921-9930
- TN Nashville
Northern Telecom Systems Corp
4731 Trousdale Dr
615-331-4460
- TX Dallas
Northern Telecom Systems Corp
13612 Midway Rd
214-386-4151
- TX Houston
Northern Telecom Systems Corp
6776 Southwest Frwy
713-977-8833
- VA McLean
Northern Telecom Systems Corp
1749 Old Meadow Rd
703-442-0670
- VA Richmond
Northern Telecom Systems Corp
1504 Santa Rosa Rd
804-288-7271
- WA Seattle
Northern Telecom Systems Corp
18000 Pacific Hwy S
206-246-1965
- WI Brookfield
Northern Telecom Systems Corp
16535 W Bluemound Rd
414-784-8550
- BRITISH COLUMBIA, CANADA**
Vancouver
Northern Telecom Systems Ltd
1665 W Broadway
604-734-1201
- ONTARIO, CANADA**
Nun's Island
Northern Telecom Systems Ltd
4 Place du Commerce
514-761-6111
- ONTARIO, CANADA**
Don Mills
Northern Telecom Systems Ltd
95 Barber Greene Rd
416-455-6550
- AUSTRIA**
Vienna
Data 100 GmbH
Reisnerstrasse 18 A-1030
72-24-52
- BELGIUM**
Brussels
SA Data 100 NV
100 B 15
720-92-30
- ENGLAND**
Hemel Hempstead
Data 100 Limited
Maxted Close
61281
- FRANCE**
Paris
Data 100 SA
La Boursidiere RN 186;92350 Le
Plessis Robinson 630-21-44
- GERMANY, WEST**
Frankfurt
Data 100 GmbH
Myliusstrasse 33-37;600
Frankfurt/M1
72-04-71
- ITALY**
Milan
Data 100 SPA
Via Turati 29, 20121
02-654-731
- NETHERLANDS**
Amsterdam
Data 100 BV
Bldg Bavincstaete;Pr of J H
Bavincklaan 5
020-471621
- SPAIN**
Madrid
Data 100 SA
Edificio UAP;Avda Del
Generalismo 11 Pl 2
455-62-25
- SWITZERLAND**
Zurich
Data 100 AG
Baumackerstrasse 46 CH-8050
311.66.20
- NORTHWEST MICROFILM INC**
1600 67 Ave
Minneapolis, MN 55430
612-566-5950
Contact: Stephen D Twite
■ Products & Services
Microfilm equipment, systems and services
Branch Sales Offices:
MN Minneapolis
15 S 9 St
612-375-1444
- MO Kansas City
Northwest Microfilm Inc
1660 Broadway
816-421-8240
- MO St Louis
Northwest Microfilm Inc
100 N Broadway
314-621-5252
- NE Omaha
Northwest Microfilm Inc
206 S 19 St
402-346-7818
- NOTIFIER CO**
3700 N 56 St
Lincoln, NE 68504
402-464-0211
Contact: Mark Larson
■ Products & Services
Fire detection/protection equipment
- NOVA ELECTRIC MFG CO**
263 Hillside Av
Nutley, NJ 07110
201-661-3434
Contact: K Niovitich
■ Products & Services
Power supplies
Uninterruptible power supplies, line
correctors, etc
Branch Sales Offices:
CA Los Alamitos
Scientific Devices West

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breaks?
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IL Chicago
Ampol Svc & Eng
312-685-1350

MD Bethesda
Spectro Sales

MA Norwell
Bordewick Eng Sales
617-659-4915

MI Farmington
Anderson Electronics
313-476-9161

NJ Wayne
NLC Assoc

NC Charlotte
Jake Rudisill Assoc
704-377-6901

PA Pittsburgh
Wainwright Tech'l Sales
412-487-5055

TX Houston
Data Marketing Assoc
214-661-0400

TX Dallas
Data Marketing Assoc

BRITISH COLUMBIA, CANADA
Vancouver
Alpha Technologies Ltd
604-430-1476

NOVATION INC
18664 Oxnard St
Tarzana, CA 91356
213-996-5060
Contact: A Nagy
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Automatic answering units

Branch Sales Offices:

CO Aurora
Mark Robbins
2726 S Moline Ct
303-696-0200

NH Donbarton
Ken Busick
RFD 2 Barnard Hill Rd
603-224-7040

NUCLEAR ENGINEERING SERVICES
CO
107 San Zeno Way
Sunnyvale, CA 94086
408-737-2080
Contact: S J Peluso
■ Products & Services
Value-added carriers
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
Teletypewriters
Selection & transfer equipment, patching
equipment
Data communications consultants
Lease and resale organizations
Maintenance organizations

NU DATA CORP
32 Fairview Av
Little Silver, NJ 07739
201-842-5757
Contact: Dennis G Huyler
■ Products & Services
Line drivers
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Data content monitors
Protocol analyzers
Programmable terminals
Interactive terminals
Portable data entry terminals
Terminal controllers
Terminal interfaces
Automatic answering units
Automatic calling units
Code converters
Computer/communications interfaces
Protocol converters

OKIDATA CORP
111 Gaither Dr
Mt Laurel, NJ 08054
609-235-2600
Contact: John D Roberts
■ Products & Services
Disc drives, large
Remote line printers
Teletypewriters, impact

Branch Sales Offices:

CA Santa Ana
Okidata Corp
3609 W Macartur
714-979-5490

CA Mt View
Eakins Assoc
999 Independence Ave
415-969-4533

CA Fountain Valley
MQI Computer Products
18381 Bandilier Cir
714-964-4722

CO Denver
PLS Assoc Inc
7755 E Quincy Ave
303-773-1218

FL Maitland
Pen-Tech Assoc Inc
Box 1475
305-645-3444

IL North Brook
Marketech
3665 Woodhead Dr
312-291-1220

MA Wakefield
Data Engr Services
40 Bellevue Rd
617-245-6666

MI Farmington Hills
CMP Inc
23995 Freeway Park Dr
313-477-7700

MO Grandview
Digital System Sales Inc
4006 E 13 Tr
816-765-3337

NJ Millburn
Graydon Assoc
396 Millburn Ave
201-467-1400

NY Fayetteville
R D Sherman
104½ Clinton Ave
315-637-9861

NY Jericho
Electro Rep Inc
366 N Broadway
516-938-0540

PA Montgomeryville
Robec Inc
Rt 309
215-628-4960

TX Houston
Data Marketing Inc
3330 Bering Dr
713-780-2511

VT Fairfax
Scientific Associates Inc
9512A Lee Hwy
703-385-0600

WA Seattle
Datec Inc
364 Upland Dr
206-575-1470

OLIVETTI CORP
155 White Plains Rd
Tarrytown, NY 10591
914-631-8100
Contact: Jim Parker
■ Products & Services
DDP systems
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Floppy disc recorders
Tape drives, magnetic
Tape punch/reader, paper
Badge readers
Batch terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teletypewriters
Teletypewriters
Video data terminals (KSR)
Word processors, communicating
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Olivetti Corp
2609 N 24 St
602-273-7156

CA Los Angeles
Olivetti Corp
1300 W 8 St
213-387-3161

CA Anaheim
Olivetti Corp
1100 N Gilbert
714-772-7160

CA S San Francisco
Olivetti Corp
321 Allerton Ave
415-873-6911

CO Aurora
Olivetti Corp
11050 E Bethany Dr
303-755-9803

CT Wallingford
Olivetti Corp
27 Village Ln
203-269-2097

FL Miami
Olivetti Corp
16505 NW 13 Ave
305-625-6451

FL Tampa
Olivetti Corp
5440 Mariner Dr
813-877-8204

GA Atlanta
Olivetti Corp
11 Dunwoody Park
404-394-7222

IL Chicago
Olivetti Corp
816 S Michigan Ave
312-939-3577

LA New Orleans
Olivetti Corp
1900 Canal St
504-524-0321

MD Baltimore
Olivetti Corp
6322 Security Blvd
301-944-7000

MA Boston
Olivetti Corp
1255 Boylston St
617-266-4970

MI Madison Heights
Olivetti Corp
1401 W Girard Ave
313-543-3800

MO Kansas City
Olivetti Corp
3801 SW Trafficway
816-531-3805

MO St Louis
Olivetti Corp
110 N Jefferson Ave
314-241-5090/2648

NE Omaha
Olivetti Corp
3172 Dodge St
402-344-4727

NJ Mountainside
Olivetti Corp
1130 Globe Ave
201-233-5950

NY Woodside
Olivetti Corp
37-15 61 St
212-779-0100

NY New York
Olivetti Corp
219 E 42 St
212-599-4000

NC Raleigh
Olivetti Corp
5 Koger Exec Ctr
919-787-2704

OH Cincinnati
Olivetti Corp
11240 Cornell Park Dr
513-489-0221

OH Cleveland
Olivetti Corp
5700 W Canal Rd
216-524-8300

OH Columbus
Olivetti Corp
690 S High St
614-443-0536

OH Dayton
Olivetti Corp
5335 Springboro Pike
513-298-6570

PA Allentown
Olivetti Corp
4016 Hamilton Blvd
215-433-4111

PA Bala Cynwyd
Olivetti Corp
23 City Line Ave
215-839-4430

PA Pittsburgh
Olivetti Corp
Parkway West; Rt 60E
412-923-1080

PA Reading
Olivetti Corp
2230 N Fifth St
215-373-5101

TX Austin
Olivetti Corp
1016 W 6 St
512-477-6726

TX Dallas
Olivetti Corp
2600 Forest Ln
214-243-4303

TX Houston
Olivetti Corp
3773 SW Frwy
713-961-5050

TX San Antonio
Olivetti Corp
226 W Cypress
512-227-0351

UT Salt Lake City
Olivetti Corp
525 E Third St
801-531-8441

VA Norfolk
Olivetti Corp
6340 Center Dr
804-461-1101

VA McLean
Olivetti Corp
1768 Old Meadow Rd
703-356-0420

WA Seattle
Olivetti Corp
1127 Pine St
206-623-8010

WI Milwaukee
Olivetti Corp
7918 W Capital Dr
414-462-5300

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

OMNITEC DATA
2405 S 20th St
Phoenix, AZ 85034
602-258-8244
Contact: Terri Rankin
■ Products & Services
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
EIA cable testers
Response-time monitors
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Data access arrangement devices
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Maintenance organizations
Used equipment
Branch Sales Offices:
CA Los Alamitos
IPI Industries
5152 Katella Ave
213-594-4791
IL Elmhurst
International Computer Equip
772 N Church Av
312-279-1960

IL Chicago
H H Sales
1507 N Dearborn
312-733-4478

ON-LINE SOFTWARE INT'L

65 Rt 4 E
River Edge, NJ 07661
201-488-7770
Contact: Richard Ward
■ Products & Services
Data security devices, software security
modules
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

ONTEL CORP

250 Crossways Park Dr
Woodbury, NY 11797
516-364-2121
Contact: Doug Wagner
■ Products & Services
Disc drives, floppy
Discs, floppy
Tape, magnetic
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating

Branch Sales Offices:

CA San Jose
Ontel Corp
4010 Moorpark Ave
408-241-9880

IL Oakbrook
Ontel Corp
222 Camden Ct
312-920-8540

NJ Cherry Hill
Ontel Corp
496 N Kings Hwy
609-482-1555

TX Arlington
Ontel Corp
2401 W Park Row Dr
817-275-8371

OPTICAL BUSINESS MACHINES INC

804 W New Haven Ave
Melbourne, FL 32901
800-327-6429
Contact: Billy Graham
■ Products & Services
Data entry terminals

Branch Sales Offices:

CA Costa Mesa
OBM
3183 Airway Ave
714-754-1622

MI Grosse Pointe Woods
OBM
19819 Mack Ave
313-882-1975

NJ Englewood Cliffs
OBM
111 Charlotte Pl
201-569-1178

OPTICAL INFORMATION SYSTEMS

350 Executive Blvd
Elmsford, NY 10523
914-345-5850
Contact: James Walyus

- Products & Services
Lightwave (fiber optic) systems
Bar code readers

OPTIMA DIV/SCIENTIFIC-ATLANTA

2166 Mountain Industrial Blvd
Tucker, GA 30084
404-939-6340

Contact: J LaBour

- Products & Services
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

- AL Huntsville
Beacon Electronics
11309 S Memorial Pkwy
205-881-5031
- AZ Scottsdale
Arcom Sales Co
7300 E Stetson Dr
602-947-5745
- CA Santa Fe Springs
Scientific-Atlanta Inc
10039 Pioneer Blvd
213-949-9571
- CA Tustin
XBX Sales Inc
18410 Irvine Blvd
714-832-2630
- CA Los Altos
Frauman Assoc
289 San Antonio Rd
415-941-0660
- CO Boulder
Front Range Mktg Inc
1531 Broadway
303-443-4780
- FL Melbourne
Beacon Electronics
316 Laurie St
305-259-0648
- FL Ft Lauderdale
Beacon Electronics
6842 NW 20 Ave
305-971-7320
- FL Maitland
Beacon Electronics
Box 1278
305-647-3498
- FL Ft Walton Beach
Beacon Electronics
Box 125
904-244-1550
- GA Atlanta
Beacon Electronics
6135 Barfield Rd
404-256-9640
- IL Arlington Heights
Diethert/Angel Co
2400 Oakton St
312-593-7600
- KS Derby
Palatine Sales Inc
221 W Market St
316-788-0621
- KS Mission
Palatine Sales Inc
5801 Outlook
913-831-0555
- MD Randallstown
Beacon Electronics
8513 Lucerne Rd
800-336-3747
- MA Lexington
Zieco Inc
18 Muzzey St
617-861-8300
- MI Southfield
L H Dickelman Co
24301 Telegraph Rd
313-353-8210
- MN St Paul
Repro Inc
1136 W Larpenteur Ave
612-488-0201
- MO Hazelwood
Palatine Sales Inc
346 Brookes Dr
314-895-4577
- NJ Leonia
Scientific Atlanta Inc
135 Fort Lee Rd
201-461-3650
- NY Rochester
Ossmann Component Sales Corp
280 Metro Pk
716-424-4460
- NY Syracuse
Ossmann Component Sales Corp
154 Pickard Bldg
315-455-6611
- NC Greensboro
Beacon Electronics
1207 W Bessemer Ave
919-275-9997
- OH Cleveland
C A Robinson Co Inc
5010 Mayfield Rd
216-381-9049
- OH Dayton
C A Robinson Co Inc
26 W Nottingham Rd
513-275-2412
- TN Oak Ridge
Beacon Electronics
100 Tulsa Rd
615-482-2409
- TX Ft Worth
Carey Wolf and Assoc
Box 12425
817-738-1996
- TX Houston
Carey Wolf and Assoc
9727 Fondren
713-771-1500
- UT Sandy
Front Range Mktg Inc
1811 E 9880 St
801-943-0402
- VA Lynchburg
Beacon Electronics
309 Bedford Springs Rd
800-572-0405
- VA Falls Church
Beacon Electronics
7115 Leesburg Pike
800-336-3747
- WA Seattle
S J I Corp
626 Alaska St
206-624-9020
- ONTARIO, CANADA
Mississauga ON
Scientific Atlantic Ltd
1640 Bonhill Rd
416-677-6555
- ISRAEL
Tel Aviv
Racom Electronics Co Ltd
60 Pinkas St
03-453151
- MALAYSIA FED OF
Kuala Lumpur
Pernas Plessey Elect Sdn Bhd
Wisma Bintang; 47-49 Jalan Bukit
Bintang
89321

REPUBLIC OF CHINA

Taipei
Syscom Computer Eng Co
Box 48-130
02-7026284

SCOTLAND

Macmerry East Lothian
McKertrick Agnew & Co Ltd
Great No Rd
Tranent 0875-610747

SINGAPORE

Singapore 6
Plessey Singapore Private Ltd
47 Hill St
362133

PACIFIC CYBER/METRIX INC

6800 Sierra Court
Dublin, CA 94566
415-829-8701
Contact: T J Netoff
■ Products & Services
Add-on main memory
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape punch/reader, paper
Computer/communications interfaces

Branch Sales Offices:

- CA San Jose
Datarep
97 Boston Ave
408-279-1212
- CO Denver
Par Assoc
3333 Quebec
303-355-2363
- IL Des Plaines
Coombs Assoc
1001 E Touhy
312-298-4830
- MA Needham
J J Wild Co
570 Hillside Ave
617-444-2366
- NM Las Cruces
Sota Reps
3008 Camino Real
505-523-4480
- NY White Plains
Cane Corp
2 Corporate Drive
914-694-9240
- PA Glenside
Wyncote Instrumentation
2689 Limekiln Pike
215-887-4661
- WA Bellevue
Tasco
606 110th Ave NE
914-694-9240

PANAFAX CORP

185 Froehlich Farm Blvd
Woodbury, NY 11797
516-364-1400
Contact: Robert Siegler
■ Products & Services
Facsimile terminals
Automatic answering units
Automatic calling units
Data access arrangement devices

Branch Sales Offices:

- CA Hayward
Panafax Corp
24219 Clawiter Rd
415-785-5810

IL Franklin Park
Panafax Corp
4045 Tugwell Dr
312-671-6022

PANSOPHIC SYSTEMS INC

709 Enterprise Dr
Oakbrook, IL 60521
312-986-6000
Contact: Bob Steele
■ Products & Services
Data communications software, independent software houses

Branch Sales Offices:

CA El Segundo
Pansophic Systems Inc
2230 E Imperial Hwy
213-640-2910

GA Atlanta
Pansophic Systems Inc
6520 Powers Ferry Rd
404-955-3763

IL Oak Brook
Pansophic Systems Inc
2122 York Rd
312-986-6070

NJ Clifton
Pansophic Systems Inc
925 Clifton Ave
201-471-7150

NY Pittsford
Pansophic Systems Inc
640 Kreag Rd
716-248-5505

TX Dallas
Pansophic Systems Inc
12200 Ford Rd
214-247-4009

VA McLean
Pansophic Systems Inc
1651 Old Meadow Rd
703-893-0350

PARADYNE CORP

8550 Ulmerton Rd
Largo, FL 33540
1-813-536-4771
Contact: Peter Vosotas
■ Products & Services
Concentrators
Line sharing units
Minicomputers
Modem sharing units
Inverse multiplexers
Multiplexers, statistical (intelligent)
Port sharing units
Remote network processors
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
MIL 188C adapters
Response-time monitors
Network management centers
DDP systems
Batch terminals
Data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Terminal interfaces
Automatic answering units
Automatic calling units
Data access arrangement devices

Branch Sales Offices:

CA Garden Grove
Paradyne Corp
12792 Valley View
714-894-7526

GA Tucker
Paradyne Corp
2191 Northlake Pkwy
404-934-5590

MI Detroit
Paradyne Corp
29350 Southfield Rd
313-559-5360

NY Hackensack
Paradyne Corp
Two University Plaza
201-342-8100

WA Alexandria
Paradyne Corp
700 N Fairfax St
703-548-4453

ONTARIO, CANADA

Willowdale ON
Paradyne Corp
250 Consumers Rd
416-494-5217

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PENRIL CORP

DATA COMMUNICATIONS DIV

5520 Randolph Rd
Rockville, MD 20852
301-881-8151
Contact: John D Familetti
■ Products & Services
Modem sharing units
Port sharing units
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)
MIL 188C adapters
Data access arrangement devices

Branch Sales Offices:

AL Huntsville
W A Brown Instruments
Box 4560
205-883-8660

AZ Tempe
Qualtech
610 W Broadway
602-967-4655

CA Los Alamitos
CSS Telecommunications
Specialists
10915 Bloomfield St
213-594-4574

CA Mountain View
CSS Telecommunications
Specialists
2680 Bayshore Frontage Rd
415-964-4335

CO Littleton
Davis Associates
709 Littleton Blvd
303-795-1400

CT Stratford
Instrument Dynamics Inc
Marina Bldg Foot of Broad St
203-378-6019

FL Ft Lauderdale
W A Brown Instruments
961 NW 53rd St
305-776-4800

FL Melbourne
W A Brown Instruments
Box 1406
305-723-0766

FL Orlando
W A Brown Instruments
Box 513
305-425-5505

FL Tallahassee
W A Brown Instruments
1325 E Tennessee St
904-878-6642

GA Atlanta
W A Brown Instruments
3070 Presidential Dr
404-455-1035

IL Wheeling
Inter-Business Corporation
925 N Milwaukee Ave
312-459-8866

KS Shawnee
Atech
Box 3334
913-268-9644

LA Mandeville
W A Brown Instruments
Box 786
504-626-9701

MD Bethesda
Bekr Industries
4924 Hampden La
301-654-1434

MA Wakefield
Instrument Dynamics Inc
Lakeside Office Pk
617-245-5100

MI Ann Arbor
George Gerhard & Assoc
2211 Jackson Ave
313-996-8077

MN Eden Prairie
First Rep Co
6420 Flying Cloud Dr
612-944-2097

NM Albuquerque
Qualtech
130 Louisiana NE
505-255-6100

NC Durham
W A Brown Instruments
123 1/2 Orange St
919-682-2383

OH Columbus
George Gerhard & Assoc
1384 Grandview Ave
614-488-9751

PA McMurray
George Gerhard & Assoc
110 Clubview Dr
412-941-5954

SC Columbia
W A Brown Instruments
1201 St Andrews Rd
803-798-8070

TN Oak Ridge
W A Brown Instruments
733 Emory Valley Rd
615-482-5761

TX El Paso
Qualtech
Box 26125
915-592-2415

TX Houston
Barry Sales
6400 Westpark
713-784-5860

TX Richardson
Barry Sales
709 Lingco
214-234-0255

WA Seattle
CSS Telecommunications
Specialists
8609 Roosevelt Way NE
206-527-4750

PUERTO RICO
Santurce 00907
Glen Allen & Co
1108 Las Palmas St
721-1570

QUEBEC, CANADA
Montreal H3A 1K2
Vidasystems
625 President Kennedy Ave
514-288-2395

AUSTRALIA
Huntingdale Victoria
Email Ltd Relays Div
15-17 Hume St
544-8244

BOLIVIA
La Paz
Coasin Bolivia SRL
Casilla 7295
40962

ENGLAND
Herts EN89TL
Nolton Communications Ltd
Fieldings Rd Chestnut
Waltham Cross 33555

INDIA
Bombay 400 029
Bali International Agencies
Mathuradas Estate Box 7059
53 50 76

KOREA REP (REP)
Seoul
Korea International Products
Services
CPO Box 3858

KUWAIT
Kuwait
Sa'id Al-Daham Trading &
Contracting Est
Box 22302
414890

MALAYSIA FED OF
Selangor
Syarikat Asean Saintifik SDN BHD
36A Jalan 30/16A;Paramount
Garden Petaling Jaya
03 775015

PHILIPPINES
Manila 2805
Alejandro Enterprises Inc
506 Republic Supermarket
Bldg;Rizal Ave Sta Cruz
40-46-39

SINGAPORE
Singapore 9
Teledata Private Ltd
Rm 826-827 Supreme House;Penang
Rd

SOUTH AFRICA
Boksburg
Standard Telephone & Cables
Telecommunications Div
Box 286
52-8311

SWITZERLAND
Montreux
Penril Technical SA
6 Rue de la Corsaz CH 1820
021 623 651

TAIWAN
Taipei 104
Sun Moon Star Co Ltd
164 Min Shen East Rd
5818521

THAILAND
Bangkok 5
Orient Research Ltd
3rd Fl KLM Bldg 2-18 Patpong Rd
38478

PERIPHONICS CORP
75 Orville Dr
Bohemia, NY 11716
516-567-1000
Contact: Hugh A Gigante
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Remote network processors
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modem eliminators
Local network systems
Add-on main memory
Floppy disc recorders
Audio response units
Data entry terminals
Programmable terminals
Automatic answering units
Automatic calling units
Computer/communications interfaces
Switches, data communications, automatic
Data communications software,
communications processors vendors
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Periphonics Corp
11056 N 23 Dr
602-944-2221

CA Irvine
Periphonics Corp
2171 Campus Dr
714-833-8850

GA Atlanta
Periphonics Corp
6065 Roswell Rd NE
404-252-6966

IL Rosemont
Periphonics Corp
10400 W Higgins Rd
312-296-2055

NJ Hillside
Periphonics Corp
1215 Liberty Ave
201-351-1033

TX Dallas
Periphonics Corp
13773 N Central Expwy
214-387-8955

PERITEK CORP-COMP TECH DIV
3014 Lake Shore Ave
Oakland, CA 94610
910-366-2029
Contact: T H Birchell
■ Products & Services
Remote network processors
Floppy disc recorders

PERKIN-ELMER
2 Crescent Place
Oceanport, NJ 07757
201-228-6800
Contact: T Dunn
■ Products & Services
Concentrators
Front-end processors
Message switchers
Minicomputers
Multiplexers, statistical (intelligent)
Packet processors
Remote network processors
DDP systems
Add-on main memory
Cartridge drives
Cassette drives
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper
Graphic display terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors

Branch Sales Offices:

AL Huntsville
Perkin-Elmer Data Systems
3313 Memorial Pkwy SE
205-881-3750

AZ Tempe
Perkin-Elmer Data Systems
2121 S Mill Ave
602-894-9121

CA Santa Clara
Perkin-Elmer Data Systems
3255 Scott Blvd
408-727-5540

CA San Diego
Perkin-Elmer Data Systems
9420 Farnham St
714-565-0602

CA San Francisco
Perkin-Elmer Data Systems
3 & Market Sts
415-543-2863

CA Inglewood
Perkin-Elmer Data Systems
11222 La Cienega
213-641-4881

CA Tustin
Perkin-Elmer Data Systems
17461 Irvine Blvd
714-544-9093

CO Denver
Perkin-Elmer Data Systems
7801 E Bellevue Ave
303-773-2855

CT Bloomfield
Perkin-Elmer Data Systems
44 Winton Bury Mall
203-243-9595

FL Orlando
Perkin-Elmer Data Systems
7200 Lake Ellenor Dr
305-851-6962

GA Norcross
Perkin-Elmer Data Systems
510 Guthridge Ct
404-448-3310

IL Arlington Heights
Perkin-Elmer Data Systems
415 W Golf Rd
312-437-5120

LA Baton Rouge
Perkin-Elmer Data Systems
6461 Siegen Ln
504-293-3540

MA Waltham
Perkin-Elmer Data Systems
318 Bear Hill Rd
617-890-0557

MI Oak Park
Perkin-Elmer Data Systems
22150 Greenfield Rd
313-968-2777

MO St Louis
Perkin-Elmer Data Systems
760 Office Pkwy
314-569-1817

NJ Englewood Cliffs
Perkin-Elmer Data Systems
140 Sylvan Ave
201-947-2200

NJ Pennsauken
Perkin-Elmer Data Systems
North Park Dr
609-665-3966

NY Binghamton
Perkin-Elmer Data Systems
One Marine Midland Plaza
607-722-4233

NY Rochester
Perkin-Elmer Data Systems
120 Allens Creek Rd
716-442-6840

OH Euclid
Perkin-Elmer Data Systems
26250 Euclid Ave
216-731-3360

OK Tulsa
Perkin-Elmer Data Systems
9920 East 42nd St
918-664-7161

PA Pittsburgh
Perkin-Elmer Data Systems
1382 Old Freeport Rd
412-963-6575

TX Richardson
Perkin-Elmer Data Systems
1011 South Sherman St
214-234-8880

TX Houston
Perkin-Elmer Data Systems
5855 Point West Dr
713-995-5544

VA McLean
Perkin-Elmer Data Systems
1764 Old Meadow La
703-827-5900

WA Bellevue
Perkin-Elmer Data Systems
515 116th Avenue NE
206-455-0680

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

PERKIN-ELMER TERMINALS DIV

360 Rt 206 S
Flanders, NJ 07836
201-584-1400
Contact: George H Lerner
■ Products & Services
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)

Data communications software, intelligent
terminal vendors

Branch Sales Offices:

CA Santa Clara
Perkin-Elmer Terminals
3255 Scott Blvd
408-249-5540

CA Tustin
Perkin-Elmer Terminals
17461 Irvine Blvd
714-544-9093

GA Norcross
Perkin-Elmer Terminals
510 Guthridge Ct
404-448-3310

IL Arlington Hts
Perkin-Elmer Terminals
415 W Golf Rd
312-437-3547

MA Waltham
Perkin-Elmer Terminals
318 Bear Hill Rd
617-890-1305

NJ West Long Branch
Perkin-Elmer Terminals
60 Monmouth Pkwy Rte 36
201-229-4471

PER SCI INC
12210 Nebraska Av
Los Angeles, CA 90025
213-820-7613
Contact: Robert F Allen
■ Products & Services
Disc drives, floppy

Branch Sales Offices:

NY Skaneateles
Per Sci Inc
3 Gayle Rd
315-685-3340

AUSTRALIA
Sandringham
Adaptive Electronics P/L
77 Beach Rd
03-598-4422

AUSTRIA
Scheydgasse
Burisch
A 1210 Wien
0 22-2-387638

ENGLAND
Bournemouth
Data Type Systems Ltd
West Howe Ind Estate
02016 6561/2

FRANCE
92606 Asnieres
Metrologie
4 Avenue Laurent
1 791-44-44

GERMANY, WEST
Bauerstrabe 15
Barton Automation GmbH
8000 Muenchen 40
089/371621

SWEDEN
Stockholm
Bita Elektronik Svenska AB
Sveavagan 49
08 319000

SWITZERLAND
Bern CH3011
Interest AG
Spitalgasse 40
031-22481

PERTEC COMPUTER CORP
12910 Culver Blvd; PO Box 92300
Los Angeles, CA 90066
213-822-9222
Contact: Lewis Shomer
■ Products & Services
DDP systems
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Batch terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Maintenance organizations

PERTEC COMPUTER CORP PERIPHERALS DIV

PO Box 2198
Chatsworth, CA 91311
213-999-2020
Contact: Bob Lewis
■ Products & Services
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Teleprinters, impact
Power supplies
Educational services
Maintenance organizations

Branch Sales Offices:

AZ Scottsdale
BFA Corp
4426 N Saddlebag Tr
602-994-5400

CA Encino
Pertec Peripherals Div
17835 Ventura Blvd
213-996-1333

CA San Jose
Pertec Peripherals Div
675 N First St
408-297-6558

CA Irvine
Pertec Peripherals Div
17332 Von Karman Ave
714-540-8340

CA Irvine
Pertec Peripherals Div
17112 Armstrong
714-540-8340

CO Denver
BFA Corp
12015 E 46 Ave; Campus Six
303-371-2422

FL Cocoa Beach
Pertec Peripherals Div
1325 N Atlantic Ave
305-784-5220

IL Oak Brook
Pertec Peripherals Div
2605 W 22nd St
312-920-9540

NH Hudson
Pertec Peripherals Div
Box 263
603-883-2100

NM Albuquerque
BFA Corp
3705 Westerfield NE
505-292-1212

NM Las Cruces
BFA Corp
312 W Parker
505-523-0601

OR Portland
Pacific Northwest Elect
2035 SW 58 St

- PA King of Prussia
Pertec Peripherals Div
1150 First Ave
215-265-8310
- TX Dallas
Pertec Peripherals Div
8625 King George Dr
214-387-2817
- UT Salt Lake City
BFA Corp
395 Lawndale Dr
801-466-6522
- WA Bellevue
Pacific Northwest Elect
14264 SE Eastgate Way
206-641-6444
- BRITISH COLUMBIA, CANADA
W Vancouver
Tracan Electronics Western Ltd
1144 Millstream Rd
604-926-3411
- AUSTRALIA
Bymbie
Digital Electronics
Box 324
449-4400
- AUSTRIA
Burisch GABH
Schegdgosse 31
- BELGIUM
Bruxelles
Sait Electronics SA
Chaussee de Ruisbroek 66
376-20-30
- BRAZIL
Rio de Janero
Globers Digital SA
Rua Isedio Rocha 1057
2123759
- DENMARK
Naerum
SC Metric A/S
Skodsborgvej 305
02-80-4200
- ENGLAND
Reading
Pertec Peripherals Div
10 Portman Rd
UK-734-582115
- FINLAND
Helsinki
Finn Metric OY
Ahertajantie 60
470844
- FRANCE
Meridon
Reptec
24 Boulevard Anatole Frana
534-76-47
- GERMANY, WEST
Frankfurt am
Pertec Peripherals Division
Eichenstrasse 59
0-611-393340
- HONG KONG
Hong Kong
Multitech Hong Kong Co
20-20A Connaught Rd West
543-1772
- ISRAEL
Tel-Aviv
IS Information Systems
Box 43070
03-483261-2-3
- ITALY
20146 Milano
Computer Technology Itala
Via Wenckelmann 2
2-423-9883
- JAPAN
Tokyo
Marubun
8-1 Nihombashi
Odemmecho;2-Chome
Chuo-ku
03-662-8151
- NETHERLANDS
The Hague
Nenimij B V
Laan Copes van; Cattenburch
76-78
70-469509
- NEW ZEALAND
Takapuna Auckland
David Reid Data Products
3-5 Auburn St
492-189
- NORWAY
Oslo
Metric AS
Box 85
2-28-26-24
- PHILIPPINES
Metro Manila
Summa Computer Corp
De la Rosa Corna Salceded
85-42-36
- SOUTH AFRICA
Transvaal
CSSL Ltd
Box 31497
724-9301
- SPAIN
Madrid
Unitronics SA
Princesa 1
241-1496
- SPAIN
Barcelona
Unitronics SA
Infanta Carlota 74-78
239-2655
- SWEDEN
Stockholm
Scandia Metric AB
Fack
08-820400
- SWITZERLAND
Zurich
A Meyer & Co
Feldeggsstraasse 26
01-474174
- TAIWAN
Taipei
Multitech Intl Corp
977 Min Shen E Rd
- PHONE 1 INC
Box 1522
Rockford, IL 61110
815-877-9008
Contact: Richard Newberry
■ Products & Services
Concentrators
Multiplexers, statistical (intelligent)
Digitized-voice processors
Disc drives, floppy
Tape, paper
Audio response units
Badge readers
Data entry terminals
Terminal interfaces
Video data terminals (KSR)
Computer/communications interfaces
Branch Sales Offices:
CA Granada Hills
Phone 1 Inc
13360 Meadow Wood Ln
213-368-6211
- CA Playa Del Rey
Mark Associates
7913 West 18th St
213-641-1844
- GA Savannah
Computer Systems & Supply
Box 23701
912-352-9372
- HI Honolulu
Aloha Associates
1715 Kalakaua Ave
808-941-1574
- IL Northbrook
Resource Data Systems
801 Skokie Blvd
312-564-5440
- IN Indianapolis
Sukup & Cox Inc
2060 E 54 St
317-253-5501
- MI Farmington
Carter McCormic & Peirce
23995 Freeway Park Dr
313-477-7700
- MN St Paul
Howard A Cullen Associates
1595 Selby Ave
612-646-7371
- NC Charlotte
Zelco Associates
Box 240744
704-523-2961
- OH Fairview Park
Carter McCormic & Peirce
22650 Lorain Rd
216-779-5100
- OH Dayton
Carter McCormic & Peirce
4977 Northcutt Rd
513-222-7700
- PA Coopersburg
Pleasant Valley Assoc
RD1, Box 405
215-346-8684
- PA Monroeville
Carter McCormic & Peirce
409 Beatty Rd
412-372-4415
- TX Irving
Kemco Inc
Box 998
214-255-0537
- WA Seattle
SJI Corporation
5950-6th Ave S
206-763-8981
- WI Brookfield
Siegfried Krauss Associates
1410 Shawnee Pass
414-786-8873
- ISRAEL
Ramat Gan
International Peripheral
Equipment Corp
Box 1803
72-40-73
- PLANTRONICS/SANTA CRUZ
Box 635
Santa Cruz, CA 95061
408-426-5858
Contact: R Jahnke
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Video data terminals (KSR)

Branch Sales Offices:

- CA Santa Cruz
Plantronics
345 Encinal St
408-426-5858
- CA Fremont
Plantronics
2450 Peralta Blvd
415-928-8388
- NY New York
Plantronics
666 Third Ave
212-972-9431

PLESSY PERIPHERAL SYSTEMS

- 1691 Browning Ave
Irvine, CA 92714
714-540-9945
Contact: Glen Nicell
■ Products & Services
Front-end processors
Minicomputers
Remote network processors
DDP systems
Add-on main memory
Cartridge drives
Cassette drives
Disc drives, floppy
Disc drives, large
Tape drives, magnetic
Data entry terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations

Branch Sales Offices:

- CA Santa Ana
Plessy Peripheral Systems
1580 E Edinger Unit Q
714-972-8966
- MA Waltham
Plessy Peripheral Systems
460 Totten Pond Rd
617-890-2654
- MN Minneapolis
Plessy Peripheral Systems
8120 Penn Ave S
612-881-0190
- TX Dallas
Plessy Peripheral Systems
4300 Alpha Rd
214-387-0229
- ONTARIO, CANADA
Mississauga
Plessy Peripheral Systems
6291 Dorman Rd
416-677-5410

POINT-4 DATA CORP

- 2569 McCabe Way
Irvine, CA 92714
714-754-4114
Contact: Robin T Ollivier
■ Products & Services
Minicomputers
Multiplexers, statistical (intelligent)
Computer/communications interfaces

Branch Sales Offices:

- NJ Summit
Point-4 Data Corp
573 Springfield Ave
201-273-2914

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

POLYMORPHIC SYSTEMS

- 460 Ward Dr
Santa Barbara, CA 93111
805-967-2351
Contact: Sandra Alarcon
■ Products & Services
Modem sharing units
Error rate detectors
Add-on main memory
Cassettes
Disc drives, floppy
Discs, floppy
Graphic display terminals
Interactive terminals
Furniture, cabinets, terminal enclosures

POWERTEC INC

- 20550 Nordhoff St
Chatsworth, CA 91311
213-882-0004
Contact: Sherrill N Milner
■ Products & Services
Power supplies
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

- CA Los Altos
Powertec Inc
399 Main St
415-941-9016
- CA San Diego
Martek
3255 Wing St
714-223-2631
- CO Englewood
Barnhill III
7076 S Alton Way
303-779-3600
- CT North Haven
Pat Jenks Assoc
52 Washington Ave
203-239-6201
- FL Casselberry
EIR
450 Seminola Blvd
305-830-9600
- IL Chicago
Dave Dolin
6232 N Palaski Rd
312-286-6200
- IL Florissant
Midtec
110 S Hwy 67
314-837-5200
- MD Wheaton
Data Systems Mktg
11141 Georgia Av
301-933-0900
- MI Brighton
SAI Mktg
Box N
313-227-1786
- MN Bloomington
Northport Eng
7837 12th Av
612-854-5556

- NJ Englewood
Tecmat
500 Grand Ave
201-569-4200
- NY Endicott
Tech-Mark
101 Jefferson Av
607-748-7473
- NC Winston-Salem
Murcota
1106 Burke St
919-722-9445
- PA Huntingdon Valley
Knowles Assoc
1 Fairview Plaza
215-947-5641
- PA Jenkintown
Powertec Inc
Benjamin Fox Pavilion
215-572-1856
- TX Houston
Barnhill II
10606 Hempstead Hwy
713-688-2573
- TX Richardson
Barnhill II
1101 Executive Dr
214-231-2573
- WA Bellevue
Al Smith Co
405 166 SE
206-746-6770

PRECISION COMMUNICATIONS
SERVICES INC

- 2609 DeLeon Street
Tampa, FL 33609
813-870-0362
Contact: George Humes
■ Products & Services
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated extending
Data access arrangement devices
Data jacks and plugs
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

- AL Montgomery
Source-Of-The-South
Box 2414
205-834-1294

PRECISION MONOLITHICS INC

- 1500 Space Park Dr
Santa Clara, CA 95050
408-246-9222
Contact: Bill Johnson
■ Products & Services
Voice digitizers
- Branch Sales Offices:
- CA Santa Clara
PMI
2700 Augustine Dr
408-727-6616
- CA Santa Ana
PMI
1801 Parkcourt Pl
213-670-3791

- IL Schaumburg
PMI
1325 Remington Rd
312-885-8440
- MA Maryland
PMI
16 Bosten Post Rd
617-933-1517
- TX Richardson
PMI
1101 E Arapaho Rd
214-357-1581
- PRENTICE CORP**
266 Caspian Dr
Sunnyvale, CA 94086
408-734-9810
Contact: Perry Lindberg
■ Products & Services
Multiplexers, frequency division
Multiplexers, statistical (intelligent)
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
- Branch Sales Offices:**
- AL Huntsville
James L Highsmith & Co
2809 Triana Blvd SW
205-536-6666
- AK Anchorage
John P Bagoy Associates
3210 Rampart Dr
907-274-8531
- AZ Scottsdale
Thorson Desert States Inc
6560 N Scottsdale Rd
602-998-2444
- CA Encino
Prentice Corporation
16661 Ventura Blvd
213-990-0765
- CA Los Angeles
The Thorson Co
520 S Sepulveda Blvd
213-476-1241
- CA Goleta
The Thorson Co
340 S Kellogg Ave
805-964-8751
- CA Irvine
The Thorson Co
18009 Skypark Cir
714-557-4460
- CA Alhambra
The Thorson Co
624A N Garfield Ave
213-281-2280
- CA Woodland Hills
Pacific Mountain States
6319-B De Sota Ave
213-999-2281
- CA Torrance
Allen Edwards Associates
2808 Oregon Ct
213-328-9770
- CA Long Beach
Allen Edwards Associates
1536 Termino Ave
213-597-1231
- CA San Diego
Allen Edwards Associates
1735 Archer St
714-272-8144
- CA Irvine
Allen Edwards Associates
17722 Palmento Way
714-552-7850
- CA Newbury Park
Allen Edwards Associates
1800 W Hillcrest Dr
850-498-5413
- CA Oakland
Consolidated Data Terminals
477 Roland Way
415-638-1222
- CA Redondo Beach
Consolidated Data Terminals
2636 Manhattan Beach Blvd
213-970-1030
- CA Mt View
CSS Telecommunications
2680 Bayshore Frontage Rd
415-964-4335
- CA Los Angeles
The David Jamison Carlyle Corp
2049 Century Park E
213-277-4562
- CA Orinda
The David Jamison Carlyle Corp
141 Crestview Dr
415-254-9378
- CA Newport Beach
The David Jamison Carlyle Corp
2709 Hillside Dr
714-640-0355
- CA Los Angeles
Ezra Mintz Associates
8939 S Sepulveda
213-670-5410
- CA San Diego
Ezra Mintz Associates
7841 Balboa Ave;Ste 104
714-565-4921
- CA San Diego
The Thorson Co-San Diego
7841 Balboa Ave;Ste 108
714-292-5825
- CO Englewood
Thorson Rocky Mountain Inc
7076 S Alton Way
303-779-0666
- FL Boca Raton
James L Highsmith & Co
4190 NW Oak Cir
305-368-9194
- FL Orlando
James L Highsmith & Co
2545 Industrial Blvd
305-293-5202
- HI Honolulu
Territorial Electronics Inc
1221 Kapiolani Blvd
808-521-8724
- HI Honolulu
David Jamison Carlyle Corp
677 Alamoana Blvd
808-531-5136
- IL Chicago
H&H Sales Inc
2007 N Sedgwick
312-871-8250
- IL Chicago
The David Jamison Carlyle Corp
4200 Marine Dr
312-975-1500
- IN Indianapolis
H&H Sales Inc
3232 Bluebell Lane
317-297-1876
- IN Indianapolis
Data Processing Sciences
6326 N Rucker
317-251-6471
- KY Louisville
Data Processing Sciences
3715 Bardstown Rd
- MD Oxon Hill
Prentice Corp
6192 Oxon Hill Rd
301-839-6555
- MA Fairhaven
Data Brain
Box 161
617-994-3944
- MI Brighton
Robert Lowry & Assoc
8163 W Grand River
313-227-7067
- MI Grand Rapids
Lowary Associates Inc
3902 Costa NE
616-363-9839
- MI Southfield
Data Processing Sciences
28165 Greenfield
313-961-7299
- MN St Paul
Dytec North Inc
1821 University Av
612-645-5816
- MO St John's
Mid-West Mktg
3606 Woodson Rd
314-426-2500
- NJ East Orange
Friedman Assoc
134 Evergreen Pl
201-673-2500
- NJ Mataman
David Jamison Carlyle Corp
550 Route 34
201-946-9669
- NJ Bogota
Qytel
204 Leonia Ave
201-487-7737
- NM Albuquerque
Data Handling Co
218 Manzano Av NE
505-268-4364
- NY New York
Prentice Corporation
521 5th Ave
212-611-7754
- NC Charlotte
James L Highsmith & Co
1141 Hawthorne Rd
704-333-7743
- OH Dayton
Robert Lowry & Assoc
2194 Hewitt Ave
513-435-7684
- OH Cleveland
Robert Lowry & Assoc
1440 Snow Rd
216-398-0506
- OH Columbus
Robert Lowry & Assoc
1050 Freeway Dr N
614-436-2051
- OH Cincinnati
Data Processing Sciences
2327 Park Ave
513-961-0776
- OH Cleveland
Data Processing Sciences
17534 Royalton Rd
216-572-1122
- OH Columbus
Data Processing Sciences
6076 Rusch Blvd
614-463-1047

- OH Toledo
Data Processing Sciences
3126 Sylvania Ave
419-472-0111
- OH Dayton
Data Processing Sciences
3300 S Dixie Ave
513-294-2770
- OR Portland
Distributed Data Products
6443 SW Beaverton
503-297-3738
- PA King of Prussia
J E Cuesta Co Inc
570 DeKalb Pike
- PA Pittsburgh
Robert Lowry & Assoc
7 Parkway Ctr
412-922-5110
- TX Richardson
Computer Marketing Corp
777 S Central Expwy
214-231-1426
- TX Houston
Computer Marketing Corp
8401 Westheimer
713-782-8290
- UT Salt Lake City
Thorson Rocky Mountain
3691 W 1987 S
801-973-7969
- VA Richmond
James L Highsmith & Co
2604-D Buford Rd
804-272-5888
- WA Seattle
Distributed Data Products
419 Occidental Ave S
206-625-1565
- WA Redmond
Consolidated Data Terminals
14960 NE 31st Cir
206-883-0100
- BOLIVIA
La Paz
Electronica Computacion Equipos
Ltda
Casilla 1070
34-3245
- ECUADOR
Quito
Ingenieria De Sistemas Cia Ltda
Box 1038
527882
- ENGLAND
Kent
Feshon Systems Ltd
Station House, Otford
- GERMANY, WEST
Frankfurt
Telemation GmbH
6 Frankfurt/Main 1; Feldbergstra
Be 25
0611-723418
- KOREA REP (REP)
Seoul
Buhae Corp
KPO Box 1681 Jung-Ku
22-4404
- NETHERLANDS
503HR Veldhoven
Simac Electronics
Veenstraat 20
040-533725
- VENEZUELA
Valencia
Microdata SRL
Calle Libertad; 91-28 San Blas
041-56408
- PRIME COMPUTER INC
Prime Park
Natick, MA 01760
617-655-8000
Contact: Richard Sterry
■ Products & Services
Minicomputers
DDP systems
Local network systems
Add-on main memory
Disc drives, large
Tape drives, magnetic
Data entry terminals
Interactive terminals
Remote job entry terminals
Teleprinters, impact
Video data terminals (KSR)
Video data terminals (RO)
Computer/communications interfaces
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations
- Branch Sales Offices:
AL Huntsville
Prime Computer Inc
3315 S Memorial Pkwy
205-883-2120
- AZ Phoenix
Prime Computer Inc
5125 N 16 St
602-264-4264
- CA Irvine
Prime Computer Inc
2120 Business Center Dr
714-975-0262
- CA Palo Alto
Prime Computer Inc
2479 Bayshore Dr
415-856-1900
- CA Sacramento
Prime Computer Inc
601 University Ave
916-929-7523
- CA San Diego
Prime Computer Inc
444 Camino del Rio S
714-293-7420
- CA San Francisco
Prime Computer Inc
1 Market Plaza
415-543-9213
- CA Tarzana
Prime Computer Inc
18321 Ventura Blvd
213-881-8433
- CO Denver
Prime Computer Inc
700 S Colorado Blvd
303-758-6317
- CT Stamford
Prime Computer Inc
200 Broad St
203-357-9750
- FL Orlando
Prime Computer Inc
6900 S Orange Blossom Trail
305-855-0040
- GA Atlanta
Prime Computer Inc
5801 Peachtree Dunwoody Rd
404-252-8900
- IL Oak Brook
Prime Computer Inc
2803 Butterfield Rd
312-920-6750
- IN Carmel
Prime Computer Inc
11550 N Mendian
317-884-7500
- MA Wellesley
Prime Computer Inc
1 Washington St
617-237-2205
- MI Grand Rapids
Prime Computer Inc
1550 E Biltmore Ave SE
616-957-1150
- MI Troy
Prime Computer Inc
755 W Big Beaver
313-362-0050
- MN Bloomington
Prime Computer Inc
2950 Metro Office Dr
612-854-5976
- MO St Louis
Prime Computer Inc
1810 Craig Rd
314-576-0010
- NJ Mountainside
Prime Computer Inc
240 Sheffield St
201-654-6270
- NM Albuquerque
Prime Computer Inc
4501 Indian School Rd
- NY Albany
Prime Computer Inc
1 Corporate Plaza
518-459-5330
- NY New York
Prime Computer Inc
405 Lexington Ave
212-687-6670
- NY Rochester
Prime Computer Inc
300 White Spruce Blvd
716-442-8690
- OH Cincinnati
Prime Computer Inc
4050 Executive Park Dr
513-733-4330
- OH Middleburg Heights
Prime Computer Inc
16600 Sprague Rd
216-243-4900
- OR Portland
Prime Computer Inc
9400 SW Barnes Rd
503-223-7165
- PA Camp Hill
Prime Computer Inc
209 Senate Ave
701-763-7961
- PA Bridgeville
Prime Computer Inc
1225 Washington Pike
412-257-0991
- PA Wayne
Prime Computer Inc
650 E Swedesford Rd
215-687-8030
- TX Austin
Prime Computer Inc
313 E Anderson Ln
512-458-8216

For further catalog information, turn to
UpDate Service Card, page 201.

TX Dallas
Prime Computer Inc
4825 LBJ Frwy
214-233-6091

TX Houston
Prime Computer Inc
6001 Savoy Dr
713-780-8060

VA Rockville
Prime Computer Inc
1600 Research Blvd
703-821-8616

WA Bellevue
Prime Computer Inc
1603 116 St NE
206-455-0774

WA Richland
Prime Computer Inc
189 W Greenview Dr
509-735-6329

WI Milwaukee
Prime Computer Inc
735 North Water St

ONTARIO, CANADA
Rexdale
Prime Computer of Canada Ltd
27 Enterprise Rd
416-249-7251

AUSTRALIA
New South Wales
Prime Computer of Australia Ltd
15 Blue St
02-929-0044

AUSTRIA
Austria
Datamed GesMBH
Schulgasse 59
222-439-287

DENMARK
Copenhagen
Prime Computer Scandinavia AB
2600 Glostrup
02-455430

ECUADOR
Quito
Secor
Avenida Amazonas 1001
52-0458

EGYPT (UAR)
Cairo
Rehimco
17 El Nakhil St
70-4482

ENGLAND
Hounslow Middlesex
Prime Computer (UK) Ltd
Lampton Rd
01-572-6241

FRANCE
Paris
Prime Informatique
33 Rue Fernand Forest
0772-9117

GERMANY, WEST
Wiesbaden
Prime Computer GmbH
348 Gustav Stresemann Ring 12-16
06121-3611

GREECE
Athens
American Computer Systems Ltd
Dionisiou Areopagitou 7
21-9228735

ITALY
Milan
Encodex SPA
Piazzale Bian Camano 1
2-316333

JAPAN
Tokyo
Nippon Marc W Ltd
4-30 Roppongi-Chome
586-9669

KOREA REP (REP)
Seoul
Korea Computer Center
8-61 Galwog-Dong
793-8061

KUWAIT
Salmiah
Fakhoury Trading Co
Salem Burarak St
61-0845

NETHERLANDS
The Netherlands
Prime Computer Benelux BV
2715 CA Zoetermeer
79-510061

NEW ZEALAND
Parnell Auckland
IDL Utilities Ltd
060 Parnell
799659

NORWAY
Oslo
Prime Computer Scandinavia AB
1346 Gjettrum
02-544326

SAUDI ARABIA
Saudi Arabia
Prime Computer Inc
Riyadh CR 9328
928-20094

SCOTLAND
Glasgow
Prime Computer Inc
141 W Nile St
041-332-2248

SINGAPORE
Singapore
Total Computer Systems (S) Pty
Ltd
50 Kallang Bahru
293-4401

SWEDEN
Stockholm
Prime Computer Scandinavia AB
S 17154 Solna
08-987595

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

PRINTER SYSTEMS CORP
1 W Deerpark Rd #104
Gaithersburg, MD 20760
301-840-1070
Contact: Sam Swamy
■ Products & Services
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Terminal controllers
Branch Sales Offices:
GA Marietta
Printer Systems Corp
Box 7203
404-973-6517
PA Pittsburgh
Printer Systems Corp
Box 12863
412-854-2311

PRINTER TERMINAL COMMUNICATIONS CORP
124 Tenth Street
Ramona, CA 92065
714-789-5200
Contact: Dom Plesha
■ Products & Services
Local network systems
Teleprinters, impact
Branch Sales Offices:
CA Tustin
Electronic Marketing Specialists
2600 Walnut
714-560-5133
CA Sherman Oaks
Electronic Marketing Specialists
13837 Ventura Blvd
213-990-4244
CA Sunnyvale
Electronic Marketing Specialists
599 N Mathilda
408-245-9291
CO Parker
Western Marketing Associates
Parker Professional Bldg
303-841-2788
GA Atlanta
Flex Comm International Inc
3379 Peach Tree Rd NE
404-237-9242
IL Chicago
First Rep Company
9420 W Foster Ave
312-992-0830
MA Winchester
J & J Associates
225 East St
617-729-5770
MN Eden Prairie
First Rep Company
6420 Flying Cloud Dr
612-944-2097
MO Independence
Computer Dataco
2425 S Crysler
816-254-3600
VA Annandale
Lankenau Associates
3705 Forest Grove Dr
703-256-0800
WA Seattle
Hayes Technical Data
Communications
8500 Perimeter Rd S
206-763-2210
WI Milwaukee
First Rep Company
9401 Beloit Rd
414-546-2033

PRINTRONIX INC
17421 Derian Av
Irvine, CA 92713
714-549-7700
Contact: Dave Gray
■ Products & Services
Remote line printers
Branch Sales Offices:
AL Huntsville
Gentry Assoc
2109 W Clinton Av
205-534-9771
AZ Scottsdale
OEM Specialties
6900 E Camelback Rd
602-941-5646
CA Sunnyvale
Group III Electronics
524 Lakeside Dr
408-245-4392

- CA Redondo Beach
Group III Electronics
2615 Manhattan Beach Blvd
213-973-7844
- CA San Diego
Group III Electronics
7263 Engineer Rd
714-292-0525
- CO Denver
Par Assoc
10515 E 40th
303-371-4140
- FL Orlando
Gentry Assoc
7527 Currency Dr
305-859-7450
- GA Rosewell
Gentry Assoc
9800 Grimes Bridge Rd
404-998-2828
- HI Honolulu
Computer Services
875 Waimanu St
808-531-5267
- IL Arlington Heights
Dytec/Central
315 W University
312-394-3380
- IN Indianapolis
Dytec/Central
25 Beechway Dr
317-247-1316
- IA Iowa City
Dytec/Iowa
Box 2148
319-683-2282
- KS Lenexa
Dytec/South
8245 Nieman Rd
913-888-0215
- KY Dayton
Lowry & Assoc Inc
2194 Hewitt
513-435-7684
- LA Gretna
Gentry Assoc
1799 Stumpf Blvd
504-367-3975
- MD Gaithersburg
Mesa Inc
16021 Industrial Dr
301-948-4350
- MA Lowell
S & S Electronics Inc
80 Stedman St
617-459-2578
- MI Brighton
Lowry & Assoc
8163 W Grand River
313-227-7067
- MN St Paul
Dytec/North
1821 University Av
612-645-5816
- MO Creve Coeur
Dytec/South
11657 Adie Rd
314-731-5400
- NJ Ft Lee
Technical Marketing Assoc
2460 Lemoine Ave
201-224-6911
- NM Albuquerque
BFA Corp
1704 Moon SE
505-292-1212
- NM Las Cruces
BFA Corp
Box 1237
505-524-9693
- NY North Syracuse
Naco Electronics Corp
Box 276
315-699-2651
- NC Burlington
Gentry Assoc
428 Alamance Rd
919-227-3639
- OH Cleveland
Lowry & Assoc Inc
1440 Snow Rd
216-398-0506
- OH Dayton
Lowry & Assoc Inc
2194 Hewitt
513-435-7684
- OR Portland
Group III Electronics
2035 SW 58
503-292-3505
- PA Ambler
Denco Data Equip
25 Skippack Pike
215-542-9876
- PA Pittsburgh
Lowry & Assoc
Seven Parkway Ctr
412-922-5110
- TX Dallas
US Data Assoc Inc
14241 Proton Rd
214-661-9633
- TX Houston
US Data Assoc Inc
4120 A-Directors Row
713-681-0200
- TX Austin
US Data Assoc Inc
8701 Shoal Creek Blvd
512-454-3579
- WA Bellevue
Group III Electronics
14262 SE Eastgate Way
206-641-6444
- ONTARIO, CANADA
Rexdale
Ahern & Soper
31 Enterprise Rd
416-245-4848
- QUEBEC, CANADA
Dorval
AES
PO Box 2088
514-634-7151
- QUEBEC, CANADA
Systems Technology Services
9577 Cote Liesserd
514-631-7292
- ARGENTINA
Buenos Aires
Contel
Senillosa 173
- AUSTRALIA
New South Wales
Prime Computer
15 Blue St; N Sydney
011-612-929-0044
- AUSTRIA
Vienna
Plessey Ges Mbh
Rotenturm Str 25
432 22 634 575
- BELGIUM
Brussels
C N Rood B V
37 Place de Jamblinne; de Meux
Plein
322-735-2135
- DENMARK
2000 Kobenhaven
Sun Corp
Finsensvej 39A
451-878-888
- ENGLAND
Edgware, Middlesex
Pragma Ltd
29 High St
441-952-8471
- FRANCE
Courbevoie
Impression Enregistrement des
Resultats
132, Rue de Sebastopol
334-30-20
- GERMANY, WEST
Altheim
Computer OEM Trading GmbH
45 Kirchstrasse
496-105-75-590
- GREECE
Piraeus
Flame Hellas Ltd
14 Skouse
3021 452 6538
- ISRAEL
Ramat-Gan
International Peripheral
Equipment Ltd
Box 1803
724073
- ITALY
Milano
SEGI
Via Timavo
392-607-3255
- JAPAN
Tokyo
Y E Data
1-20-7 Kita-Ohtsuka-Toshima-Ku
949-2033
- MEXICO
Despacho, Naucalpon, EDD
BPM de Mexico S A
Blvd M Avila Camacho 40
905-557-6125
- NETHERLANDS
Rijswijk
C N Rood B V
Box 42
3170-996360
- NEW ZEALAND
Wellington
C B L Datacom
89 Courtney Place
857-939
- NORWAY
N-1371 Asker
Teleinstrument A B
Box 134
472 789 460
- SOUTH AFRICA
Braamfontein
Datakor Pty Ltd
Smit & De Beer Sts
724-3511
- SPAIN
Barcelona
Hardware & Software
Milanesado, 1 Bis
343-204-2099
- SWEDEN
Vallingby
Teleinstrument AB
Box 490
08-380-370

SWITZERLAND

Dubendorf
Rodata
Usterstrasse 120
8201613

PROTOCOL COMPUTERS INC

10889 Wilshire Blvd
Los Angeles, CA 90024
213-479-0946
Contact: Richard L Swarz
■ Products & Services
Protocol analyzers
Protocol converters
Data communications consultants

PULSECOM DIV/HARVEY HUBBELL

5714 Columbia Pike
Falls Church, VA 22041
703-998-4300

Advertising page 45

Contact: Harold D Wood

■ Products & Services
Line sharing units
Multiplexers, frequency division
Port sharing units
Line drivers
Modems, voice-grade, low-speed
(0-1,200 b/s)
MIL 188C adapters
Terminal controllers
Data access arrangement devices
Protocol converters

Branch Sales Offices:

AK Anchorage
Harry J Lang & Associates
1371 Hillcrest Dr
907-279-5741

GA Atlanta
Pulsecom Div/Harvey Hubbell
1471 Hearst Dr NE
404-237-0229

HI Honolulu
ITT Corp Regional Sales Office
3207 D Nimitz Hwy
808-836-2848

MN Minnetonka
Pulsecom Div/Harvey Hubbell
18413 Spring Crest Dr
612-474-4043

NV Reno
Pulsecom Div/Harvey Hubbell
12485 Overbrook Dr
702-851-0627

NJ Morristown
Pulsecom Div/Harvey Hubbell
11 Randolph Dr
201-540-1005

OH Raymond
Pulsecom Div/Harvey Hubbell
28918 Storms Rd
513-642-9349

TX Carrollton
Pulsecom Div/Harvey Hubbell
1935 Chesham Dr
214-492-2763

VA Falls Church
Pulsecom Div/Harvey Hubbell
5714 Columbia Pike
703-998-4300

ONTARIO, CANADA
Downsview
Electronic Systems Ltd
62 Alness St
416-661-3673

PYROTRONICS

8 Ridgedale Ave
Cedar Knolls, NJ 07927
201-0267-1300
Contact: Harry Lein
■ Products & Services
Data security devices, encoder/decoders
Data security devices, personal
identification systems
Fire detection/protection equipment

Branch Sales Offices:

CA Van Nuys
Pyrotronics
13631 Satcoy St
213-988-6661

GA Atlanta
Pyrotronics
3070 Presidential Dr
404-451-5405

IL Elmhurst
Pyrotronics
490 Wrightwood Ave
312-279-4604

NY New York
Pyrotronics
675 Third Ave
212-661-8520

QANTEL CORPORATION

4142 Point Eden Way
Hayward, CA 94545
415-877-7777
Contact: Chuck Ritley
■ Products & Services
Minicomputers
DDP systems
Local network systems
Database processors
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Disc drives, large
Tape, magnetic
Audio response units
Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Data communications consultants
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Educational services

Branch Sales Offices:

AZ Tempe
Qantel Corporation

AZ Tucson
Qantel Corp

AR Little Rock
Qantel Corporation

CA Colton
Qantel Corporation

CA Los Angeles
Qantel Corporation

CA Monterey
Qantel Corporation

CA San Diego
Qantel Corporation

CA San Mateo
Qantel Corporation

CA Santa Fe Springs
Qantel Corporation

CA Sacramento
Qantel Corp

CO Denver
Qantel Corporation

CT Windsor
Qantel Corporation

CT Hartford
Qantel Corp

FL Miami
Qantel Corporation

FL Tampa
Qantel Corporation

GA Atlanta
Qantel Corporation

IL Oakbrook
Qantel Corporation

IN Indianapolis
Qantel Corporation

IN South Bend
Qantel Corporation

LA Metairie
Qantel Corporation

MD Hagerstown
Qantel Corporation

MA Framingham
Qantel Corporation

MA Boston
Qantel Corp

MI Saginaw
Qantel Corporation

MI Southfield
Qantel Corporation

MN St Paul
Qantel Corporation

MO Kansas City
Qantel Corporation

MO Kansas City
Qantel Corporation

NE Omaha
Qantel Corporation

NV Las Vegas
Qantel Corporation

NH Nashua
Qantel Corp

NJ Woodbridge
Qantel Corporation

NY New York
Qantel Corporation

NY Rochester
Qantel Corporation

NY Buffalo
Qantel Corp

NY Scarsdale
Qantel Corp

NY Albany
Qantel Corp

NC Charlotte
Qantel Corporation

OH Cincinnati
Qantel Corporation

OH Strongsville
Qantel Corporation

OR Salem
Qantel Corporation

PA Montgomeryville
Qantel Corporation

PA Pittsburgh
Qantel Corporation

RI Providence
Qantel Corp

TN Memphis
Qantel Corporation

TX Amarillo
Qantel Corporation

TX Dallas
Qantel Corporation

TX Houston
Qantel Corporation

UT Salt Lake City
Qantel Corporation

WA Kirkland
Qantel Corporation
WI Milwaukee
Qantel Corporation
WI Schofield
Qantel Corporation

Get new product information when it breaks?
Turn to **UpDate Service Card, page 201.**

Q E D INFORMATION SCIENCES INC
180 Linden St
Wellesley, MA 02181
617-237-5656
Contact: Stewart Stokes Jr
■ Products & Services
Educational services

QEI INC
60 Fadem Rd
Springfield, NJ 07081
201-379-7400
Contact: L C Menkes
■ Products & Services
Multiplexers, frequency division
Multiplexers, time division
Modems, voice-grade, low-speed
(0-1,200 b/s)
Code converters

Branch Sales Offices:
TX Houston
QSS
123 N Point Dr
713-445-8055

QUAD SYSTEMS INC
16021 Industrial Dr
Gaithersburg, MD 20760
301-948-4612
Contact: M Lindsey
■ Products & Services
Front-end processors
Line sharing units
Minicomputers
Multiplexers, statistical (intelligent)
Packet processors
Digitized-voice processors
Tape drives, magnetic
Remote line printers
Computer/communications interfaces
Data compression devices
Protocol converters

Branch Sales Offices:

CA La Crescenta
Beckrep Inc
5838 Irving Ave
213-957-1111

MA No Easton
Heather Associates
27 Heritage Dr
617-583-7698

QUEBEC-TELEPHONE
6 Rue St Jean
Rimouski, QB G5L 7E4

QUESTRONICS INC
3565 South West Temple #5
Salt Lake City, UT 84115
801-262-9923
Contact: LeRoy Jacobsen
■ Products & Services
Data content monitors
Protocol analyzers
Response-time monitors

Branch Sales Offices:

CA El Granada
D C M Assoc
Box 1192
415-726-6326
CA Los Angeles
Ezra Mintz Assoc
8929 S Sepulveda Blvd
213-670-5410

CO Littleton
Dapec Inc
5575 Sycamore
303-798-6538

FL Satellite Beach
Reynolds & Assoc
476 North A1A
305-773-4700

MD Linthicum
KD Assoc
201 Benton Ave
301-636-1151

NJ Cherry Hill
Datronix
20 Brace Rd
609-795-1141

OH Toledo
Inter Computer Service
Box 393
419-666-2278

WA Bellevue
D P M Assoc
515 116 Ave NE
206-453-9082

BRITISH COLUMBIA, CANADA

Vancouver
Infotron Systems Ltd
2653 W 3
604-738-4598

ONTARIO, CANADA
Scarborough
Associated Test Eqpt
3530 Pharmacy Ave
416-497-2208

QWIP SYSTEMS/DIV EXXON

5551 Vanguard
Orlando, FL 32809
■ Products & Services
Facsimile-service carriers
Facsimile terminals
Paper for terminals

Branch Sales Offices:

FL Orlando
Q-Tac
5551 Vanguard
800-423-7777

QUME CORP

2350 Qume Dr
San Jose, CA 95131
408-942-4000
Contact: William E Gott
■ Products & Services
Disc drives, floppy
Data entry terminals
Programmable terminals
Remote line printers

Branch Sales Offices:

CA Santa Clara
QUME Corp
1400 Coleman Av
408-247-6930

CA Torrance
QUME Corp
2501 237 St
213-326-7812

GA Decatur
Qume Corp
4319 Covington Hwy
404-284-8500

IL Oak Brook
QUME Corp
2625 Butterfield Rd
312-323-2802

IL Palatine
Qume Corp
909 Wilmette Rd
312-991-7250

NJ Upper Saddle River
QUME Corp
23 Industrial Ave
201-327-4244

TX Dallas
Qume Corp
4747 Leston St
214-688-0074

RACAL/DANA INSTRUMENTS INC

18912 Von Karman Ave
Irvine, CA 92715
714-833-1234
Contact: Carol Stienke
■ Products & Services
Electrical-parameters test equipment
Power supplies
Pulse and signal regenerators

Branch Sales Offices:

AL Huntsville
Saber Associates
1605 Willowbrook
205-883-4306

AZ Phoenix
PLS Associates
4001 North 31st Ave
602-279-1531

CA Santa Clara
Rocal-Dana Instruments
1400 Coleman Ave
408-727-2342

CA Irvine
Rocal-Dana Instruments
18912 Von Karman
714-833-1234

CO Denver
PLS Associates Inc
7755 Quincy Ave
303-773-1218

CT North Haven
Pat Jenks Associates
52 Washington Ave
203-239-6201

FL Pompano Beach
Saber Associates
2051 NW 17th Ln
800-327-8998

GA Dunwoody
Saber Associates
Box 888241

IL Chicago
Comtel/Pivan Engineering
3535 W Peterson Ave
312-539-4838

IN Indianapolis
Comtel/Pivan Engineering
1259 W 86th St
317-253-1681

IA Cedar Rapids
Comtel/Pivan Engineering
204 Collins Rd NE
319-377-9434

KS Shawnee Mission
Comtel/Pivan Engineering
5920 Nall
913-722-1030

MA Wakefield
Pat Jenks Associates
607 North Ave
617-246-1590

MI Farmington
Pat Jenks Associates
23995 Freeway Pk
313-477-7700

MN Minneapolis
Comtel/Pivan Engr
5100 Edina Industrial Blvd
612-835-3060

MO St Louis
Comtel/Pivan Engr
10270 Page Blvd
314-428-5508

NM Albuquerque
PLS Associates
4300 H Silver Ave
505-255-2330

NY Great Neck
Set Marketing
287 Northern Blvd
516-466-0550

OH Dayton
Carter, McCormick & Peirce
4977 Northcull Pl
513-222-7700

OK Oklahoma City
Data Marketing Associates
2401 NW 39 Expwy
405-528-6071

OR Portland
Pacific Northwest Electronics
20355 W 58th St
503-292-3505

PA Bensalem
Eastern Inst of Philadelphia
Neshaminy Plaza
215-245-6660

SC Columbia
Saber Associates
Box 21563

TX Houston
Data Marketing Associates
3330 Bering Dr
713-780-2511

UT Salt Lake City
PLS Associates
2520 South State
801-466-8729

VA McLean
Creative Marketing Associates
6716 Old McLean Village Dr
703-442-9100

WI Brookfield
Comtel/Pivan Engineering
3055 North Brookfield Rd
414-786-1940

ONTARIO, CANADA
Mississauga Ont
Webster Instruments
1200 Aerowood Dr
416-625-0600

RACAL-MILGO
8600 NW 41st St
Miami, FL 33166
305-592-8600
Advertising pages 30-31
Contact: Matthew Kenny
■ Products & Services
Modem sharing units
Multiplexers, statistical (intelligent)
Modems, limited distance
Modems, multipoint
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
MIL 188C adapters
Network management centers

Technical control centers
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Teleprinters, impact
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Data security devices, encoder/decoders
Voice adapters
Data communications consultants
Data communications software, intelligent
terminal vendors
Maintenance organizations
Used equipment

Branch Sales Offices:
CA Sherman Oaks
Racal-Milgo Information Systems
14755 Ventura Blvd
213-995-6167

DC Washington
Racal-Milgo Information Systems
1111 19 St NW
202-296-4940

FL Miami
Racal-Milgo Intercontinental
8600 NW 41 St
305-592-7654

GA Atlanta
Racal-Milgo Information Systems
Airport/285 Office Park Bldg 3
404-763-0304

IL Des Plaines
Racal-Milgo Information Systems
1001 Touhy Ave
312-298-7150

NY New York
Racal-Milgo Information Systems
122 E 42 St
212-687-5040

SC Greenville
Racal-Milgo Information Systems
25 Woods Lake Rd
803-233-1748

BRITISH COLUMBIA, CANADA

Vancouver
Electronetic Systems
1033 Davie St
604-687-5696

ONTARIO, CANADA

Downsview
Electronetic Systems
62 Alness St
416-661-3673

ONTARIO, CANADA

Ottawa
Electronetic Systems
34 Bentley Ave
613-226-1232

QUEBEC, CANADA

Montreal
Electronetic Systems
3 Place Villamarie
514-878-1168

RACAL-TELESYSTEMS INC

410 N Michigan Ave
Chicago, IL 60611
312-329-0700
Advertising page 71
Contact: Donald W Young
■ Products & Services
Code converters
Computer/communications interfaces
Protocol converters
Data communications software, distributed
data processing system vendors

RACAL-VADIC INC

222 Caspian Dr
Sunnyvale, CA 94086
408-744-0810
Advertising pages 60-61
Contact: John Hoiness
■ Products & Services
Acoustic couplers
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Automatic calling units
Data access arrangement devices
Branch Sales Offices:

AL Huntsville
Col-Ins-Co
Box 4028
800-327-6600

AK Anchorage
Transalaska Data Systems
Box 10-665
907-344-1141

AZ Scottsdale
Barnhill
7319 E Stetson Dr
602-947-7841

CA Anaheim
Moxon Electronics
1970 S Santa Cruz St
800-422-4591

CA San Diego
Moxon Electronics
9580 Blackmountain Rd
714-578-5760

CA Santa Clara
Moxon Electronics
2376 Walsh Rd
408-727-6491

CA Lodi
Moxon Electronics
312 W Walnut Ave
209-334-1961

CO Englewood
Barnhill
7076 S Alton Way
303-779-3600

CT Wallingford
IMF Sales Assoc
202 Mansion Rd
203-265-0215

FL Orlando
Col-Ins-Co
Box 13189
305-423-7615

FL St Petersburg
Col-Ins-Co
Box 10729
813-323-7082

FL Coral Springs
Col-Ins-Co
Box C7
800-432-4480

FL Miami
Racal Milgo Inc
8600 NW 41 St
305-592-8600

GA Clarkston
Col-Ins-Co
Box 559
800-327-6600

IL Oakbrook Terrace
Racal-Vadic
18 W 100 22 St
312-932-9268

IL Rolling Meadow
SEA Inc
1225 Carnegie St
312-255-4820

IN Carmel
SEA Inc
614 B S Range Line Rd
317-846-2591

KS Shawnee Mission
Inland Assoc
7975 W 63 St
913-362-2366

LA Baton Rouge
Col-Ins-Co
11814 Coursey Blvd #437
800-327-6600

MD Silver Spring
Terminal Networks
1370 Lambertson Dr
301-649-6000

MD Racal-Vadic Inc
4720L Boston Way
301-459-7430

MA Wakefield
IMF Sales Assoc
12 Lakeside Office Pk
617-245-8900

MA Racal-Vadic Inc
16 Lakeside Office Pk
617-245-8790

MI Ann Arbor
ARC Electronics
2500 Packard Ave
313-973-1133

MN Eden Prairie
Scientific Devices
7032 Willow Creek Rd
612-944-3515

MO St Louis
Inland Assoc
13100 Manchester Rd
314-821-3742

NJ Ridgewood
Instrumentation Sales
171 E Ridgewood Av
201-445-5210

NJ Cherry Hill
Megargel Himmelstein
Av of Commerce; 2428 Rte 38
609-779-0200

NM Albuquerque
Barnhill
1410 D Wyoming NE
505-299-7658

NY E Syracuse
Ossman Instruments
6666 Old Collamer Rd
315-437-6666

NY Rochester
Ossman Instruments
130 Allens Creek Rd
716-473-5720

NY Vestal
Ossman Instruments
300 Main St
607-785-9947

NC Winston-Salem
Col-Ins-Co
Box 11607
919-748-0297

OH Miamisburg
ARC Electronics
228 Byer Rd
513-859-3040

OH Rocky River
ARC Electronics
21360 Center Ridge Rd
216-333-8375

OR Portland
Rush Drake & Assoc
Box 8009
503-224-3145

PA Pittsburgh
Arc Electronics
160 N Craig St
412-681-8609

SC Greenville
Col-Ins-Co
Box 5091 Station B
800-327-6600

TN Nashville
Col-Ins-Co
1804 Linden Ave
615-269-3726

TX Houston
Barnhill
10606 Hempstead Hwy
713-688-9971

TX Austin
Barnhill
111 W Anderson Ln
512-451-0217

TX Richardson
Barnhill
1101 Executive Dr E
214-231-2573

UT Murray
Barnhill
5180 S 300 West
801-262-3000

WA Seattle
Rush Drake & Assoc
11524 15 Ave NE
206-364-8830

WI Waukesha
SEA Inc
2423 Pebblevalley Rd
414-547-6637

ONTARIO, CANADA
Rexdale
Canadian GE
396 Attwell Dr
416-675-7500

ENGLAND
Reading
Racal Milgo Ltd

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

RADIAN CORP-UNITECH PRODUCTS

8501 Mopac Blvd
Austin, TX 78766
512-454-4797
Contact: T N Kaspar
■ Products & Services
Tape punch/reader, paper
Batch terminals
Programmable terminals
Remote job entry terminals
Computer/communications interfaces
Maintenance organizations
Branch Sales Offices:
ENGLAND
London
Task Terminals Ltd
117 Cleveland St
01-637-4516

RAMCOM SYSTEMS

4121 Redwood Ave
Los Angeles, CA 90066
213-827-4432
Contact: Ralph C Tisdale
■ Products & Services
Line sharing units
Message switchers
Multiplexers, time division
Port sharing units
Data communications consultants

RAMTEK CORP

2211 Lawson Ln
Santa Clara, CA 95050
408-988-2211
Contact: Nick Horn
■ Products & Services
Acoustic couplers
Graphic display terminals
Programmable terminals
Interactive terminals
Teleprinters, impact
Branch Sales Offices:
AL Huntsville
Ramtek Corp
4717 University Av
205-837-7000
CA Newport Beach
Ramtek Corp
3625 W MacArthur Blvd
714-979-5351
FL Maitland
Ramtek Corp
235 S Maitland Ave
305-645-0780
IL Schaumburg
Ramtek Corp
2050 Algonquin Rd
312-397-2279
MD Bethesda
Ramtek Corp
7979 Old Georgetown Rd
301-656-0350
MA Burlington
Ramtek Corp
16 New England Executive Park
617-273-4590
NJ E Brunswick
Ramtek Corp
197 Route 18
201-238-2090
NM Albuquerque
Ramtek Corp
2403 San Mateo Blvd NE
505-884-3557
OH Pepper Pike
Ramtek Corp
29425 Chagrin Blvd
216-464-4053
OH Dayton
Ramtek Corp
5045 N Main
513-278-9461
TX Plano
Ramtek Corp
520 Central Pkwy
214-422-2200
WA Federal Way
Ramtek Corp
34008-9th Ave S
206-838-5196

RANDOLPH ENGINEERING

3810 Manchaca Rd
Austin, TX 78704
512-442-3584
Contact: Robert R Robbins
■ Products & Services
Uninterruptible power supplies, line
correctors, etc

RAPICOM INC

7 Kingsbridge Rd
Fairfield, NJ 07006
408-946-2493
Contact: Jack Gannon
■ Products & Services
Facsimile terminals

Branch Sales Offices:

CA Long Beach
Rapicom Inc
400 Oceangate
213-436-3254

CA San Francisco
Rapicom Inc
5 Thomas Mellon Cir
415-468-3460

CA San Diego
Rapicom Inc
3550 Camino Del Rio N
714-563-8391

CO Denver
Rapicom Inc
9745 E Hampden Ave
303-751-5007

CT Darien
Rapicom Inc
745 Post Rd
203-655-3353

DC Washington
Rapicom Inc
1700 N Moore St
703-527-6561

GA Atlanta
Rapicom Inc
35 Executive Park Dr NE
404-634-4292

IL Hillside
Rapicom Inc
4415 W Harrison St
312-449-5680

MA Boston
Rapicom Inc
1616 Soldiers Field Rd
617-782-1581

MI Southfield
Rapicom Inc
24800 NW Hwy
313-585-0451

MO Clayton
Rapicom Inc
7710 Carondelet Av
314-725-5004

NY New York
Rapicom Inc
1114 Ave of Americas
212-869-1930

OH Shaker Heights
Rapicom Inc
3645 Warrensville Ctr Rd
216-921-6243

OR Portland
Rapicom Inc
6420 SW Macadam Ave
503-245-1459

PA Pittsburgh
Rapicom Inc
601 Grant St
412-281-2208

PA Bala Cynwyd
Rapicom Inc
7 Bala Ave
215-667-2291

TX Houston
Rapicom Inc
13403 NW Fwy
713-462-7553

TX Dallas
Rapicom Inc
6350 LBJ Fwy
214-661-3826

WA Seattle
Rapicom Inc
1200 112th Av NE
206-453-8749

ONTARIO, CANADA

Ottawa
Rapicom Inc
181 Bank St
613-236-7055

GERMANY, WEST

Weisbaden
Kalle-Infotec
Freidrich-Bergius-Str 5
49-6121-22051

JAPAN

Tokyo
Ricoh Co Ltd
1-15-5 Minami-Aoyama
813-479-3111

RAYTHEON DATA SYSTEMS/TERMINAL DIV

1415 Boston-Providence TnPk
Norwood, MA 02062
617-762-6700
Contact: Charles E Donahue
■ Products & Services
Minicomputers
DDP systems
Data entry terminals
Programmable terminals
Remote job entry terminals
Word processors, communicating

Branch Sales Offices:

CA Irvine
Jeffrey A Owman
1692 Browning Ave
714-979-5800

IL Des Plaines
Allen D Easterwood
1111 E Farley Ave
312-694-4420

NY Lake Success
John Tucker
3000 Marcus Ave
212-895-2567

TX Houston
J Robert Davis
14825 St Mary's Ln
713-496-0100

RAYTHEON DATA SYSTEMS MINI-COMPUTER DIV

360 Forbes Boulevard
Mansfield, MA 02048
617-339-5731
Contact: Robert A Latham
■ Products & Services
Concentrators
Message switchers
Minicomputers
Modem sharing units
Packet processors
Remote network processors
Network management centers
DDP systems
Local network systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, large
Electronic mailboxes
Tape, magnetic
Tape drives, magnetic
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Teleprinters
Video data terminals (KSR)
Word processors, communicating

Switches, data communications, automatic
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Lease and resale organizations
Maintenance organizations
Teleprocessing monitors

Branch Sales Offices:

CA Irvine
Raytheon Data Systems
1692 Browning Ave
714-979-5800

CA Santa Clara
Raytheon Data Systems
3255-4B Scott Blvd
408-249-0163

CA Sacramento
Raytheon Data Systems
1540 River Pk Dr
916-920-1740

CO Denver
Raytheon Data Systems
4755 Paris St
303-371-0990

CT Hartford
Raytheon Data Systems
111 Founders Plaza
203-289-8281

FL Miami
Raytheon Data Systems
8675 Kroger Exec Ctr Dr
305-592-3884

GA Atlanta
Raytheon Data Systems
1925 Century Blvd
404-321-3064

IL Des Plaines
Raytheon Data Systems
1111 E Touhy Ave
312-694-4420

KS Kansas City
Raytheon Data Systems
3100 Broadway
816-561-9333

MA Wellesley
Raytheon Data Systems
45 William St
617-237-4190

MA Mansfield
Raytheon Data Systems; Mini Comm
Div
360 Forbes Blvd
617-339-5731

MI Detroit
Raytheon Data Systems
24133 Northwestern Hwy
313-358-3990

MN Minneapolis
Raytheon Data Systems
7801 Metro Pkwy
612-854-2666

MO St Louis
Raytheon Data Systems
111 W Port Plaza
314-576-4433

NJ E Orange
Raytheon Data Systems
64 Evergreen Pl
201-678-4965

NJ Pennsauken
Raytheon Data Systems
Cooper Pkwy Plaza
609-665-8466

For further catalog information, turn to
UpDate Service Card, page 201.

NY Albany
Raytheon Data Systems
80 Wolf Rd
518-458-7434

NY New York
Raytheon Data Systems
489 5 Ave
212-661-2790

NY Lake Success
Raytheon Data Systems
3000 Marcus Ave
212-895-2567

NC Greensboro
Raytheon Data Systems
2301 West Meadowview Rd
919-274-5811

OH Cleveland
Raytheon Data Systems
26300 Euclid Ave
216-731-1191

OK Tulsa
Raytheon Data Systems
6111 E Skelly Dr
918-663-7853

PA Pittsburgh
Raytheon Data Systems
5 & Wood
412-281-2117

TX Dallas
Raytheon Data Systems
13500 Midway Rd
214-661-9722

TX Houston
Raytheon Data Systems
14825 St Mary's La
713-496-0100

VA Arlington
Raytheon Data Systems
400 Army-Navy Dr
703-979-6100

WA Seattle
Raytheon Data Systems
555 116 Ave NE
206-453-0650

RAYTHEON SERVICE CO

2 Wayside Rd
Burlington, MA 01803
617-272-9300
Contact: Kenneth E Willis
■ Products & Services
Maintenance organizations
Timesharing/service bureaus

Branch Sales Offices:

CA Santa Ana
Raytheon Service Co
2720 Croddy Way
714-540-8935

CA Fremont
Raytheon Service Co
39845 Paseo Padre Pkwy
415-490-1180

CA Los Angeles
Raytheon Service Company
8939 S Sepulveda Blvd
213-641-7170

CO Denver
Raytheon Service Company
1805 S Bellair St
303-758-8868

GA Marietta
Raytheon Service Co
2141 Kingston Court SE
404-952-7722

IL Addison
Raytheon Service Co
240 E Lake St
312-530-5611

MO Kansas City
Raytheon Service Company c/o TWA
11500 Ambassador Dr
816-464-6112

VA Alexandria
Raytheon Service Co
716D Church St
703-836-0550

RCA AMERICAN COMMUNICATIONS INC

400 College Rd
Princeton, NJ 08540
609-734-4000
Contact: Walt Pioli
■ Products & Services
Facsimile-service carriers
Message (including telegraph) carriers
Satellite carriers
Specialized carriers

Branch Sales Offices:

CA San Francisco
RCA Americom
One Market Plaza
415-546-2130

CA Los Angeles
RCA Americom
624 S Grand Ave
213-485-8761

GA Atlanta
RCA Americom
3395 NE Expwy
404-452-0694

IL Chicago
RCA Americom
Two N Riverside
312-648-0600

NY New York
RCA Americom
1133 Ave of Americas
212-248-2631

TX Houston
RCA Americom
2200 N Loop W
713-680-8903

RCA GLOBAL COMMUNICATIONS INC

60 Broad St
New York, NY 10004
212-248-2121
Contact: Frank A Mancuso
■ Products & Services
Facsimile-service carriers
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Telephone companies
Concentrators
Front-end processors
Line sharing units
Message switchers
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Multiplexers, statistical (intelligent)
Multiplexers, group band
Port sharing units
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Network management centers
Technical control centers
Graphic display terminals
Teletypewriters
Terminal controllers

Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Computer/communications interfaces
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants

Branch Sales Offices:

CA Santa Ana
RCA Global Comm Inc
1420 E Edinger
714-558-2492

CA Los Angeles
RCA Global Comm Inc
624 S Grand Ave
213-629-3200

CA San Francisco
RCA Global Comm Inc
One Market Plaza
415-546-2050

CO Englewood
RCA Global Comm Inc
5680 S Syracuse Cir
303-770-0327

CT West Hartford
RCA Global Comm Inc
854 Farmington Ave
203-561-0102

CT Stamford
RCA Global Comm Inc
300 Broad St
203-324-1990

DC Washington
RCA Global Comm Inc
2030 M St NW
202-862-8233

FL Miami
RCA Global Comm Inc
1515 NW 167 St
305-625-3644

GA Atlanta
RCA Global Comm Inc
3395 Northeast Expwy
404-455-3400

HI Honolulu
RCA Global Comm Inc
Box 2295
808-537-2521

IL Arlington Heights
RCA Global Comm Inc
1650 N Arlington Heights Rd
312-394-5240

LA New Orleans
RCA Global Comm Inc
2 Canal St
504-586-0485

MA Wakefield
RCA Global Comm Inc
Lakeside Office Pk
617-246-0102

MI Oak Park
RCA Global Comm Inc
21700 Greenfield Rd
313-968-2223

MN Bloomington
RCA Global Comm Inc
2850 Metro Dr
612-854-4021

MO Kirkwood
RCA Global Comm Inc
123 W Clinton Pl
314-821-2182

NJ Piscataway
RCA Global Comm Inc
201 Centennial Ave
201-885-4102

NY Deer Park
RCA Global Comm Inc
Box 54
516-586-4509

NY Fairport
RCA Global Comm Inc
145 Perinton Hills Office Pk
716-223-8925

NY Melville
RCA Global Comm Inc
555 Broad Hollow Rd
516-249-3837

OH Cincinnati
RCA Global Comm Inc
405 Executive Park Dr
513-769-5110

OH Cleveland
RCA Global Comm Inc
26250 Euclid Ave
216-261-0137

OR Portland
RCA Global Comm Inc
600 SW 10 Ave
503-224-5830

PA Morrisville
RCA Global Comm Inc
364 W Trenton Ave
215-736-1106

PA Pittsburgh
RCA Global Comm Inc
3471 Babcock Blvd
412-366-7966

TX Dallas
RCA Global Comm Inc
4825 LBJ Frwy
214-387-4470

TX Houston
RCA Global Comm Inc
4615 Southwest Frwy
713-629-9072

WA Seattle
RCA Global Comm Inc
1306 Park Place Bldg
206-622-6190

PUERTO RICO
Old San Juan
RCA Global Comm Inc
Box 3388
809-723-4800

ARGENTINA
Buenos Aires
RCA Global Comm Inc
Tucuman 425-2 C
31-5558

AUSTRALIA
Sydney
RCA Global Comm Inc
175 Pitt St
232-6350

BELGIUM
Brussels
RCA Global Comm Inc
4 Rue Gaucheret
218.41.21

BRAZIL
Rio de Janeiro
RCA Global Comm Inc
Avenida Presidente Vargas 962
S/807
223-8912

CHILE
Santiago
RCA Global Comm Inc
Moneda 920
72 42 07

COLOMBIA
Bogota
RCA Global Comm Inc
Carrera 10 #22-65
82.74.47

DOMINICAN REPUBLIC
Santo Domingo
RCA Global Comm Inc
Calle El Conde 203-1
688-0887

EGYPT (UAR)
Dokki
Fiani & Partners
143 Tahrir St
985765

EL SALVADOR
San Salvador
RCA Global Comm Inc
25 Ave Sur & 4A;Calle Poniente
22 05 01

ENGLAND
London
RCA Global Comm Inc
50 Curzon St
01-499-4100

FRANCE
Paris
RCA Global Comm Inc
5 Rue Drouot
824-6363

GERMANY, WEST
Frankfurt
RCA Global Comm Inc
45 Mittelweg
611-591445

GREECE
Athens
RCA Global Comm Inc
Panepistimiou 59
32 44 244

GUAM
Agana
RCA Global Comm Inc
ADA Plaza Center;Box EH
472-3272

GUATEMALA
Guatemala City
RCA Global Comm Inc
6-A Ave;11-43 Zona 1
22 2 27

HAITI
Port-au-Prince
RCA Global Comm Inc
Box 153-A Maison Leger
23971

INDIA
Bombay
International Representative-K
Balchandani
120 Wode House Rd
212484

INDONESIA
Jakarta-Barat
NVPD Soedarpo Corp
J1 Letjen;S Parman Kav
591594

IRAN
Tehran
RCA Globcom Systems Inc
Abbas Abbad Ave
851776

ITALY
Rome
RCA Global Comm Inc
Via Ostiense 81/A
57 42 147

JAPAN
Tokyo
RCA Global Comm Inc
Nishi-Shinjuku 2-chome
347-7843

JORDAN
Amman
International Representative-M
Farr
Box 3402
42462

KOREA REP (REP)
Seoul
RCA Global Comm Inc
1-KA Myung-Dong
28-0485

LEBANON
Beirut
International Representative-G
Khoury
JF Kennedy St-Flat 1
366-483

MOROCCO
Casablanca
International Representative-A
Masbah
143 Blvd Zeraoui
261082

NETHERLANDS ANTILLES
Curacao
RCA Global Comm Inc
Theaterstraat 17-Rm 29
36272

PAKISTAN
Karachi
RCA Global Comm Inc
Box 2130
612419

PANAMA
Panama City
Sistelcom
Av Mexico Y Av Ecuador
255023

PERU
Lima
RCA Global Comm Inc
Av Corpac 290 Of 52
41.21.85

SINGAPORE
Singapore
RCA Global Comm Inc
230-236 Orchard Rd
372747

SPAIN
Madrid
RCA Global Comm Inc
C/Avda Del Brasil 17
455-5041

SWITZERLAND
Lausanne
RCA Global Comm Inc
Rue Charles Monnard 1
22-71-54

TAIWAN
Taipei
RCA Global Comm Inc
162 Hsin Yi Rd
7079746

TURKEY
Istanbul
Istiklal Caddesi
Sinem Sary #108
440324

VENEZUELA
Caracas
RCA Global Comm Inc
Avenida Libertador Con Venezuela
339839

RCA GLOBCOM SYSTEMS INC AUTHORIZED RESALE COMMON CARRIER

60 Broad St
New York, NY 10004
212-248-7042
Contact: Frank DiNoia
■ Products & Services
Value-added carriers
Network management centers
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

- CA San Francisco
RCA Globcom Systems Inc
One Market Plaza
415-546-2190
- CA Los Angeles
RCA Globcom Systems Inc
1313 W Eighth St
213-413-6262
- IL Chicago
RCA Globcom Systems Inc
2 N Riverside Plaza
312-454-1533

RCA SERVICE CO DATA SERVICES

Rt 38, Bldg 204-1
Cherry Hill, NJ 08358
609-338-4170
Advertising page 154
Contact: Herbert B Shannon
■ Products & Services
Concentrators
Message switchers
Modem sharing units
Port selectors
Port sharing units
Remote network processors
Data content monitors
Network management centers
Technical control centers
Programmable terminals
Teleprinters, impact
Cables, electrical prefabricated extending
Computer/communications interfaces
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Data communications software,
communications processors vendors
Lease and resale organizations

RECOGNITION EQUIPMENT INC

PO Box 222307
Dallas, TX 75222
214-579-6000
Contact: Jock Ashby
■ Products & Services
DDP systems
Bar code readers
Data entry terminals
Portable data entry terminals

Branch Sales Offices:

- AZ Scottsdale
Recognition Equipment
2629 N Scottsdale Rd
602-947-7316
- CA Los Angeles
Recognition Equipment
3450 Wilshire Blvd
213-380-2184
- CA San Francisco
Recognition Equipment
350 Sansome St
415-421-1711

- GA Atlanta
Recognition Equipment
3300 Buckeye
404-451-7491
- IL Schiller Park
Recognition Equipment
4825 North Scott St
312-671-2900
- KS Overland Park
Recognition Equipment
10100 Santa Fe
913-649-9595
- MA Sherborn
Recognition Equipment
7 N Main St
617-655-7635
- MI Ann Arbor
Recognition Products
3861 Research Park Dr
313-668-1644
- NJ Collingswood
Recognition Equipment
434 Haddon Ave
609-858-5165
- NY New York
Recognition Equipment
201 East 42 St
212-557-0840
- OH North Olmsted
Recognition Equipment
26777 Lorain Rd
216-777-3131
- OK Tulsa
Recognition Equipment
9717 E 42 St
918-663-6662
- TX Houston
Recognition Equipment
8550 Katy Frwy
713-464-4931
- VA Alexandria
Recognition Equipment
300 North Lee St
703-548-4114
- ONTARIO, CANADA
Markham
Recognition Equipment (Canada)
Ltd
65 Ferrier St
416-495-0600
- ENGLAND
Slough, Berkshire
Recognition Equipment Ltd
442 Bath Rd
44-06286-62516
- FRANCE
Paris
Recognition Equipment France SA
311 rue LeCourbe
1-531.53.49
- GERMANY, WEST
Frankfurt
Recognition Equipment GmbH
6050 Offenbach/Main
611-88.60.01-2-3
- ITALY
Roma
Recognition Equipment Italia SpA
Via Isonzo 34
396-844.82.58-290

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

JAPAN

Tokyo
Recognition Equipment Japan
#6 Kowa Bldg; 4-chome
Mishi-Azabu, Minato-Ku
407-6011-2-3-4

NETHERLANDS

Amsterdam
Recognition Equipment Nederland
NV
Buikslotermeerplein 127 A
20-32.78.77

SWEDEN

Stockholm
AB Recognition Equipment
Industri
Tulegatan 39
468-15.14.50

RENTAL ELECTRONICS INC

2445 Faber Pl
Palo Alto, CA 94303
415-856-7600
Contact: Sandra R Gilmore
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Data content monitors
Protocol analyzers
Response-time monitors
Disc drives, floppy
Tape punch/reader, paper
Digital plotters
Graphic display terminals
Programmable terminals
Portable data entry terminals
Remote line printers
Video data terminals (KSR)
Video data terminals (RO)
Power supplies
Lease and resale organizations

Branch Sales Offices:

- CA Fullerton
Rental Electronics Inc
597 S State College Blvd
714-879-0561
- CA Mountain View
Rental Electronics Inc
2440 Charleston Rd
415-968-8845
- CA Northridge
Rental Electronics Inc
19527 Business Centre Dr
213-993-7368
- IL Des Plaines
Rental Electronics Inc
1267 N Rand Rd
312-827-6670
- MD Gaithersburg
Rental Electronics Inc
16600 Oakmont Ave
301-948-0620
- MA Burlington
Rental Electronics Inc
One North Ave
617-273-2770
- NJ Wyckoff
Rental Electronics Inc
681C Lawlins Rd
201-891-8500
- TX Dallas
Rental Electronics Inc
4402 Sunbelt Dr
214-661-8082

BRITISH COLUMBIA, CANADA

Richmond
Rental Electronics Inc
10991 Shellbridge Way
604-278-8458

ONTARIO, CANADA

Rexdale
Rental Electronics Inc
50 Galaxy Blvd
416-675-7513

QUEBEC, CANADA

Villa St Laurent
Rental Electronics Inc
5855 Bisette
514-337-5575

RIANDA ELECTRONICS LTD

2535 Via Palma
Anaheim, CA 92801
714-995-6552
Contact: Dick McCormick
■ Products & Services
Add-on main memory
Cartridge drives
Disc drives, large
Tape drives, magnetic
Tape punch/reader, paper

Branch Sales Offices:

CA Anaheim
Moxon Electronics
1440 S State College
714-635-7600

FL Orlando
FM Assoc
5018 Mortier Ave
305-851-5716

MD Rockville
TE Corp
701 E Gude Dr
301-340-0303

NJ Hohokus
Hansen Assoc
215 Brookside Ave
201-652-7055

NM Albuquerque
PAR Assoc South
2403 San Mateo NE
505-881-5000

PA King of Prussia
Rivco-January
649 S Henderson Rd
215-265-5211

RIXON INC

2120 Ind Parkway
Silver Spring, MD 20904
301-622-2121
Advertising page 32
Contact: Bob Arnold
■ Products & Services
Line sharing units
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Channel service units
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Technical control centers
Automatic calling units
Furniture, cabinets, terminal enclosures
Switches, data communications, manual
Voice adapters

Branch Sales Offices:

CA Garden Grove
Rixon Inc
7271 Garden Grove Blvd
714-898-7737

CO Denver
Rixon Inc
1582 S Parker Rd
303-750-3682

CT Bridgeport
Rixon Inc
2266 E Main St
203-334-3414

FL Tampa
Rixon Inc
9225 Bay Plaza Blvd
813-626-1235

IL Downers Grove
Rixon Inc
1501 Ogden Av
312-852-3226

MO Kansas City
Rixon Inc
4420 Madison Av
816-531-4411

OH Dayton
Rixon Inc
5757 Far Hills Av
513-435-1948

PA Bryn Mawr
Rixon Inc
1049 Lancaster Ave
215-525-2663

TX Houston
Rixon Inc
6001 Gulf Frwy
713-923-5529

ONTARIO, CANADA
Ottawa
Rixon/Sangamo
2675 Blackwell St
613-741-1231

ROBINS INDUSTRIES CORP

75 Austin Blvd
Commack, NY 11725
510-226-1494
Contact: Jim Thornton
■ Products & Services
Tape, paper
Error controllers

ROCKWELL-COLLINS

PO Box 10462
Dallas, TX 75207
214-996-2336
Contact: A D Costanzo
■ Products & Services
Computerized branch exchange (CBX)
Concentrators
Front-end processors
Message switchers
Remote network processors
Network management centers
Data communications software,
communications processors vendors

Branch Sales Offices:

CA Newport Beach
Collins Comm Switching Sys
4311 Jamboree Rd
714-833-4645

GA Atlanta
Collins Comm Switching Sys
1591 Phoenix Blvd
404-996-7112

IL Des Plaines
Collins Comm Switching Sys
3150 Des Plaines Av
312-298-5177

NY New York
Collins Comm Switching Sys
666 3rd Ave
212-661-6530

VA Arlington
Collins Comm Switching Sys
1745 Jefferson Davis Hwy
703-685-2679

WA Renton
Collins Comm Switching Sys
15 S Grady Way
206-226-6665

**ROCKWELL INTERNATIONAL
ELECTRONIC DEVICES DIV**

Box 3669
Anaheim, CA 92803
714-632-3729
Contact: W C Kosoff
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Tape punch/reader, paper

Branch Sales Offices:

CA Anaheim
Rockwell Int'l
Box 3669
714-632-3698

IL Des Plaines
Rockwell Int'l
1011 E Touhy
312-297-8862

NJ N Brunswick
Rockwell Int'l
850-870 US Rt 1
201-246-3630

GERMANY, WEST

Munchen-Martinsried
Rockwell Int'l GmbH
Fraunhoferstrasse 11
089-859-9575

Get new product information when it
breaks?
Turn to **UpDate Service Card, page
201.**

ROLM CORP

4900 Old Ironsides Dr
Santa Clara, CA 95050
408-988-2900
Contact: Robert Nugent
■ Products & Services
Computerized branch exchange (CBX)
Disc drives, floppy

ROYAL BUSINESS MACHINES INC

150 New Park Ave
Hartford, CT 06106
203-523-4881
Contact: Ronald S Harvey
■ Products & Services
Minicomputers
Cartridges
Cartridge drives
Cassettes
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Programmable terminals
Interactive terminals
Remote line printers
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

CA San Diego
Royal Business Machines Inc
2817 Wilkerson Ct
714-268-0441

CA Cerritos
Royal Business Machines Inc
12607 Hiddencreek Way
213-404-2648

CA Redwood City
Royal Business Machines Inc
1281 Veterans Blvd
415-365-6611

CT Hartford
Royal Business Machines Inc
150 New Park Ave
203-523-4881

FL Miami
Royal Business Machines Inc
8181 NW 36th St
305-592-1155

FL Tampa
Royal Business Machines Inc
5340 W Kennedy Blvd
813-870-0640

GA Atlanta
Royal Business Machines Inc
3951 Pleasantdale Rd
404-448-0100

IL Rosemont
Royal Business Machines Inc
10600 W Higgins Rd
312-296-7020

MD Townson
Royal Business Machines Inc
610 Washington Ave
301-821-0714

MD Silver Springs
Royal Business Machines Inc
8555 16th St
301-588-5678

MA Wellesly
Royal Business Machines Inc
40 William St
617-431-1100

MI Southfield
Royal Business Machines Inc
24275 Northwestern Hwy
313-353-6570

MI Grand Rapids
Royal Business Machines Inc
2215 29th St SE
616-243-6962

MO St Louis
Royal Business Machines Inc
2222 Schuetz Rd
314-569-2800

NJ Union
Royal Business Machines Inc
2700 Route 22 E
201-688-5160

NC Charlotte
Royal Business Machines Inc
1515 Mockingbird Ln
704-523-5022

NC Greensboro
Royal Business Machines Inc
Friendship Center
919-294-2493

OH Springsdale
Royal Business Machines Inc
415 Glenspring Dr
513-825-4600

PA Ft Washington
Royal Business Machines Inc
Box 368
215-628-4200

PA Pittsburgh
Royal Business Machines Inc
1711 Douglas Dr W
412-244-0200

TX Dallas
Royal Business Machines Inc
8204 Elmbrook Dr
214-688-0970

TX Houston
Royal Business Machines Inc
3121 Richmond Ave
713-528-0536

WA Bellevue
Royal Business Machines Inc
14250 NE 21st
206-643-2000

WI Brookfield
Royal Business Machines Inc
3455 N 124th St
414-781-0131

To find local sales offices of companies, turn to **Vendor Directory, page 301.**

RUSCO ELECTRONIC SYSTEMS

1840 Victory Blvd
Glendale, CA 91201
213-240-2540
Contact: Stuart Katches
■ Products & Services
Badge readers
Data entry terminals
Data security devices, personal identification systems

Branch Sales Offices:

CA Palo Alto
Rusco Electronic Systems
1804 Embarcadero Rd
415-858-1000

CA Los Angeles
Rusco Electronic Systems
6055 E Washington Blvd
213-725-1411

CA San Diego
Rusco Electronic Systems
5333 Mission Cntr Rd
714-297-5173

CA Tustin
Rusco Electronic Systems
17411 Irvine Blvd
714-832-1416

CO Denver
Rusco Electronic Systems
6000 E Evans
303-758-9233

CT Glastonbury
Rusco Electronic Systems
39 New London Tpk
203-633-8379

FL Tampa
Rusco Electronic Systems
2625 E 4 Ave
813-248-4955

GA Atlanta
Rusco Electronic Systems
1900 Century Blvd
404-325-1025

IL Elmhurst
Rusco Electronic Systems
188 Industrial Dr
312-833-0720

IN Indianapolis
Rusco Electronic Systems
5330 Madison Ave
317-788-4649

LA Metairie
Rusco Electronic Systems
3100 27th St
504-835-0713

MA Foxboro
Rusco Electronic Systems
38 Mechanic St
617-543-4891

MI Farmington Hills
Rusco Electronic Systems
32985 Hamilton Ct
313-553-9320

MN Burnsville
Rusco Electronic Systems
201 W Burnsville
612-894-8040

MO St Louis
Rusco Electronic Systems
2031 Olive St
314-231-8622

NJ Hackensack
Rusco Electronic Systems
401 Hackensack Ave
201-343-7100

NY New York City
Rusco Electronic Systems
60 E 42nd St
212-883-1155

NY Albany
Rusco Electronic Systems
125 Wolf Rd
518-459-6593

NC Charlotte
Rusco Electronic Systems
4801 E Independence
704-535-4120

OH Cincinnati
Rusco Electronic Systems
230 Northland Blvd
513-771-6297

OH Westlake
Rusco Electronic Systems
24650 Center Ridge
216-835-4288

OR Portland
Rusco Electronic Systems
211 Oregon Pioneer Bldg
503-225-0028

PA Philadelphia
Rusco Electronic Systems
8040 Roosevelt Blvd
215-331-5313

PA Pittsburgh
Rusco Electronic Systems
2945 Banksville Rd
412-561-8243

TN Nashville
Rusco Electronic Systems
417 Welshwood Dr
615-832-7666

TX Richardson
Rusco Electronic Systems
324 N Central Expwy
214-690-3640

TX Houston
Rusco Electronic Systems
6330 Gulfon St
713-777-5254

VA McLean
Rusco Electronic Systems
6723 Whittier Ave
703-821-3763

WA Seattle
Rusco Electronic Systems
2910 First Ave South
206-622-0452

WI New Berlin
Rusco Electronic Systems
2345 S 170th St
414-784-6850

SABER LABORATORIES INC

577 Tenth St
San Francisco, CA 94111
415-431-4707
Contact: Leo Jones
■ Products & Services
Data security devices, encoder/decoders

SALES DEVELOPMENT ASSOCIATES

148 Linden St
Wellesley, MA 02181
617-237-5860
Contact: Steven M Stroum
■ Products & Services
Data communications consultants

**SANDERS ASSOCIATES INC
INFORMATION PRODUCTS DIV**

Daniel Webster Highway S
Nashua, NH 03061
603-885-5280
Contact: Edward Niquette
■ Products & Services
Graphic display terminals
Programmable terminals
Interactive terminals
Terminal controllers

Branch Sales Offices:

CA Long Beach
CTI Data Systems Inc
3450 E Spring St
213-426-7375
MN St Paul
DeBeck Associates Inc
2119 Grand Ave
612-690-1557
TX Dallas
Sanders Associates Inc
7540 LBJ Fwy
214-385-1665
VA Arlington
Sanders Associates Inc
1755 S Jefferson Davis Hwy
703-920-5204
WA Seattle
SJI Corporation
626 S Alaska St
206-763-8981

SANDERS TECHNOLOGY

Box 1226
Nashua, NH 03061
603-882-1000
Contact: M B Dougherty
■ Products & Services
Teleprinters, impact

Branch Sales Offices:

CA Fountain Valley
MQI Computer Products
18381 Bandilier Cir
714-964-4722
CA Mountain View
MQI Computer Product
2615 Miller Ave
415-948-8961
CO Englewood
Thorsen Rocky Mountain
7076 S Alton Way
303-779-0666
FL Orlando
Gentry Assoc Inc
7527 Currency Dr
305-859-7450
IL Northbrook
Marketch/Kaltronics
3665 Woodhead Dr
312-291-1220

MD Gaithersburg
Mesa Inc
16021 Industrial Dr
301-948-4350

MA Lowell
S & S Electronics
80 Stedman St
617-459-2578

MO Grandview
Digital Systems Sales Inc
4006 E 137 Ter
816-765-3337

NM Albuquerque
PSI Systems
2610 San Mateo NE
505-881-5000

NY Plainview
Bomac Marketing Inc
88 Sunnyside Blvd
516-349-7664

OH Chagrin Falls
W C Koepf Assoc
68 Olive St
216-247-5129

OR Hillsboro
Data Systems Marketing
910 NW Brookwood
503-640-4883

PA Harleysville
P B Lotz Associates
500 Main St
215-256-6588

TX Houston
Comspec Inc
10000 Old Katy Rd
713-461-4248

WA Bothell
Data Systems Marketing
10412 Beardslee Blvd
206-487-3571

ONTARIO, CANADA
Burlington
Network Data Systems Ltd
3425 Harvester Rd
416-681-2919

SANGAMO WESTON DATA SYSTEM

PO Box 3041
Sarasota, FL 33578
813-371-0811
Contact: B Barton
■ Products & Services
Multiplexers, frequency division
Multiplexers, time division
FM systems
Data security devices, encoder/decoders

Branch Sales Offices:

CA Irvine
Sangamo Weston
2021 Business Center Dr
714-851-9401
MD Silver Spring
Sangamo Weston
1320 Fenwick Ln
301-588-8200

SCHLAGE ELECTRONICS

3260 Scott Blvd
Sunnyvale, CA 95051
408-727-5170
Contact: Kent Sterling
■ Products & Services
Badge readers
Data security devices, personal
identification systems

SCIENCE ACCESSORIES CORP

970 Kings Highway W
Southport, CT 06490
203-255-1526

Contact: H A Cleveland

Branch Sales Offices:

CA Tustin
Electronic Marketing Specialists
2600 Walnut Ave
714-832-9920
CO Golden
J F Hurlbut Assoc
622 Gardenia Ct
303-279-7796
IL Mt Prospect
Cain-Forlaw Co Inc
1203 Ironwood Dr
312-253-3578
NC Charlotte
James L Highsmith & Co
1411 Hawthorne Ln
704-333-7743
PA Pittsburgh
WKM Assoc Inc
90 Clariton Blvd
412-892-2983
TX Dallas
Martin, Zienkosky, Browne &
Assoc
4203 Beltway
214-233-5535
VA Fairfax
Sci-Rep
9512A Lee Hwy
703-385-0600
WA Seattle
Hayes Technical
8500 Perimeter Rd
206-763-2210

**SCIENTIFIC-ATLANTA INC
SATCOM DIVISION**

3845 Pleasantdale Rd
Atlanta, GA 30340
404-449-2000
Contact: David Speed
■ Products & Services
Earth stations
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)

Selection & transfer equipment, monitor &
test switching equipment
Switches, data communications, automatic

Branch Sales Offices:

CA San Jose
Scientific-Atlanta
2025 Gateway Pl
480-286-9152
MD Crofton
Scientific-Atlanta
2121 Baldwin Av
301-261-3233

ENGLAND

Middlesex
Scientific-Atlanta Europe
1-7 Sunbury Cross Centre
Sunbury on Thames 89751

SCI SYSTEMS INC

8600 S Memorial Parkway
Huntsville, AL 35802
205-883-4800
Contact: Peter A Highberg
■ Products & Services
Minicomputers
FM systems
Data entry terminals
Programmable terminals
Interactive terminals

Portable data entry terminals
Remote job entry terminals
Terminal controllers

SELANAR CORP

2403 De LaCruz Blvd
Santa Clara, CA 95050
408-727-2811
Contact: Barry M Southard
■ Products & Services
Digital plotters
Graphic display terminals
Interactive terminals
Remote line printers
Teleprinters, impact
Terminal controllers

Branch Sales Offices: ONTARIO, CANADA

Ottawa
Allcom Data Ltd
1980 Merivale Rd
613-226-2340

GERMANY, WEST

Ottobrunn
ISI Computer GmbH
Alte Landstrasse 5
089-6060 71/72

SELECTERM INC

Two Audubon Rd
Wakefield, MA 01880
617-246-1300
Contact: George Troy
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
EIA cable testers
Cassettes
Cassette drives
Discs, floppy
Data entry terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Teleprinters
Teleprinters, impact
Teleprinters, non-impact
Video data terminals (KSR)
Word processors, communicating
Cables, electrical prefabricated extending
Paper for terminals
Ribbons and supplies for terminals and
printers
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Larkspur
Selecterm
1100 Larkspur Landing Cir
415-461-5730
MA Wakefield
Selecterm
2 Audubon Rd
617-246-1300
NY New York
Selecterm
2 Penn Plaza
212-868-1300
VA Falls Church
Selecterm
7700 Leesburg Pk
703-821-8838
VA Arlington
Selecterm
1555 Wilson Blvd
703-522-2520

SENTINEL COMPUTER CORP

9902 Carver Rd
Cincinnati, OH 45242
513-984-6622
Contact: Jack W Peters
■ Products & Services
Minicomputers
Database processors

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breaks?
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SHERWOOD DIGITAL ELECTRONICS CORP

449 E 2100 S
Salt Lake City, UT 84105
801-486-4817
Contact: Darryl Hazelgren
■ Products & Services
Code converters
Computer/communications interfaces
Protocol converters

Branch Sales Offices:

MN Minneapolis
Communications Interfaces Inc
Box 2320/Loop Station
507-663-0087
PA Pittsburgh
Expandor Inc
400 Sainte Claire Plz
412-746-2910

SHUGART ASSOC

475 Oakmead Pkwy
Sunnyvale, CA 94086
408-733-0100
Contact: Ivo Adams
■ Products & Services
Disc drives, floppy
Disc drives, large

Branch Sales Offices:

CA Sunnyvale
Shugart Assoc
1231 Midas Way
408-737-9241
CA Costa Mesa
Shugart Assoc
1503 S Coast Dr
714-979-1935
GA Atlanta
Shugart Assoc
41 Perimeter Pl
404-955-8968
MA Framingham
Shugart Assoc
1661 Worcester Rd
617-879-1700
MN Minneapolis
Shugart Assoc
6279 University Ave NE
612-574-9750
NJ Landing
Shugart Assoc
143 Main Rd
201-584-7539
TX Richardson
Shugart Assoc
1215 Executive Way
214-234-3568
ONTARIO, CANADA
Willowdale
Shugart Assoc
101 Placer Ct
416-492-8304

FRANCE

Rungis
Shugart Assoc
3 Place Gustave Eiffel; Silic
311
1-686.00.85
GERMANY, WEST
8031 Puchheim-Bahnhof
Shugart Assoc
Benzstrasse 28
089-80-60-55

SIDEREAL CORP

9600 SW Barnes Rd
Portland, OR 97225
503-297-5531
Contact: J Miller
■ Products & Services
Concentrators
Front-end processors
Line sharing units
Packet processors
Port sharing units
Teletypewriters
Terminal controllers
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Protocol converters

Branch Sales Offices:

CA San Jose
Sideral Corp
4010 Moorpark Ave
408-246-2626
CA Los Angeles
Sideral Corp
9841 Airport Blvd
213-645-1815
IL Des Plaines
Sideral Corp
1011 Touhy Ave
312-824-3112
NY New York
Sideral Corp
485 Fifth Ave
212-599-2111
OH Canton
Sideral Corp
4450 Belden Village Ave
216-442-7851
TX Dallas
Sideral Corp
8036 Aviation Pl
214-353-9191
TX Houston
Sideral Corp
4801 Woodway Dr
713-626-5821

SIECOR OPTICAL CABLES

PO Box 489
Hickory, NC 28601
704-322-3740
Contact: Alan F Fairairzl
■ Products & Services
Cables, lightwave (optical fiber)

SIEMENS CORP

186 Wood Av S
Iselin, NJ 08830
201-494-1000
Advertising pages 120-121
Contact: P Bartuska
■ Products & Services
Cassettes
Discs, floppy
Tape, magnetic
Tape, paper
Tape punch/reader, paper
Facsimile terminals

Remote job entry terminals
 Teleprinters
 Teleprinters, impact
 Teleprinters, non-impact
 Teletypewriters
 Video data terminals (KSR)
 Video data terminals (RO)
 Data security devices, encoder/decoders
 Ribbons and supplies for terminals and printers
 Lease and resale organizations
 Maintenance organizations

Branch Sales Offices:

CA Anaheim
 Siemens
 240 E Palais Rd
 714-991-1982

CA Burlingame
 Siemens
 860 Hinckley Rd
 415-697-6851

CA Torrance
 Siemens
 3535 Fashion Way
 213-370-3611

CT Meriden
 Siemens
 1A Prestige Dr
 203-235-7971

FL Miami
 Siemens
 659 N Biscayne River Dr
 305-685-6018

GA Atlanta
 Siemens
 3404 Oakcliff Rd, Bay C
 404-451-8151

IL Rosemont
 Siemens
 5310 N Siemens Ct
 312-671-2810

LA Melairie
 Siemens
 2700 Kingman St
 504-454-0651

MD Wheaton
 Siemens
 11141 Georgia Ave
 301-933-6560

MA Needham Hts
 Siemens
 30 Wexford St
 617-449-3450

MN Brooklyn Pk
 Siemens
 7232 Boone Ave N
 612-537-6667

NJ Cherry Hill
 Siemens
 2 Pin Oak Dr
 609-424-9210

NY New York
 Siemens
 767 Fifth Av Gen Motors Bldg
 212-832-6601

NC Greensboro
 Siemens
 2303 W Meadowview Rd
 919-852-4611

TX Houston
 Siemens
 10175 Harwin Dr
 713-777-9299

SIEMENS ELECTRIC LTD
DIGITAL SYSTEMS DIV

9829 45th Ave
 Edmonton, Alberta T6E 5C8
 403-436-6640
 Advertising page 80
 Contact: Peter Stephenson
 ■ Products & Services
 Data content monitors
 EIA cable testers
 Error rate detectors
 Protocol analyzers
 Response-time monitors

Branch Sales Offices:

IL Chicago
 Comtel/Pivan Engineering
 3535 W Peterson Ave
 312-539-4838

NY Port Chester
 Radiation Electronics
 225 Westchester Ave
 914-937-2300

OH Chesterlands
 EQS Systems
 Box 445
 216-729-2222

TX Dallas
 Crockett Southwest Co
 Box 47287
 214-251-1776

SIGNETICS CORPORATION

Box 409
 Sunnyvale, CA 94086
 408-739-7700
 Contact: J Marks
 ■ Products & Services
 Terminal controllers
 Protocol converters
 Voice digitizers

SILICON SYSTEMS INC

14351 Myford Rd
 Tustin, CA 92680
 714-731-7110
 Contact: John Lipps
 ■ Products & Services
 Front-end processors
 Message switchers
 Modem sharing units
 Digitized-voice processors
 Automatic calling units
 Code converters

SINGER CO
LIBRASCOPE DIV

833 Sonora Ave
 Glendale, CA 91201
 213-244-6541
 Contact: E T Pool
 ■ Products & Services
 Message switchers
 Microwave/laser systems
 Add-on main memory
 Digital plotters
 Graphic display terminals
 Programmable terminals
 Interactive terminals
 Portable data entry terminals
 Furniture, cabinets, terminal enclosures
 Power supplies
 Switches, data communications, automatic

SOFTWARE INTERNATIONAL

Elm Square
 Andover, MA 01810
 617-475-5040
 Contact: Patrick L Shannon
 ■ Products & Services
 Data communications software, independent software houses

Branch Sales Offices:

CA El Monte
 Western Divisional Office SI
 3204 N Rosemead Blvd
 213-573-0402

IL Des Plaines
 Central Regional Office SI
 1011 East Toughy Ave
 312-298-3500

MA North Andover
 Northeast Regional Office SI
 203 Turnpike St
 617-683-2447

Stay up-to-date with new catalog information and new product announcements. Turn to **UpDate Service Card, page 201.**

SOFTWARE RESULTS CORP

1229 W 3 Ave
 Columbus, OH 43212
 614-421-2094
 Contact: Edward J Sadlowski
 ■ Products & Services
 Front-end processors
 Minicomputers
 Computer/communications interfaces
 Data communications consultants
 Data communications software, communications processors vendors
 Data communications software, distributed data processing system vendors
 Data communications software, independent software houses
 Data communications software, intelligent terminal vendors
 Lease and resale organizations

Branch Sales Offices:

ENGLAND
 London
 Scicon Consultancy Ltd
 49-57 Berner's St
 44-1-580-5599

FRANCE
 Clichy 92110
 Europe Etudes Gecti
 92-98 Blvd Victor Hugo
 33-1-270-98-40

SOLA, A UNIT OF GENERAL SIGNAL

1717 Busse Rd
 Elk Grove Vill, IL 60007
 312-439-2800
 Contact: Dave Kemp
 ■ Products & Services
 Uninterruptible power supplies, line correctors, etc

Branch Sales Offices:

AL Huntsville
 Cartwright & Bean Inc
 2400 Bob Wallace Ave
 205-533-3509

AK W Memphis
Erickson Sales Inc
106½ Missouri
501-735-0315

AZ Phoenix
Zeus Inc
546 E Portland
602-253-6104

CA Pleasanton
Mouthrop Sales Inc
7080 Commerce Dr
415-846-0550

CA Inglewood
Jack Berman Co
8295 S LaCienega Blvd
213-649-6111

CO Denver
Zeus Inc
3333 Quebec St
303-321-4246

FL Orlando
Cartwright & Bean Inc
200 E Marks St
305-422-4531

FL Ft Lauderdale
Cartwright & Bean Inc
4000 N State Rd
305-735-4900

GA Atlanta
Cartwright & Bean Inc
3198 Cain's Hill Pl
404-233-2939

IL Chicago
Ind Reps Inc
5940 Touhy Ave
312-647-7755

IN Indianapolis
Baehr, Greenleaf & Assoc Inc
7098 N Shadeland
317-842-6204

LA Chalmette
Erickson Sales Inc
617 W Judge Perez Dr
504-271-1976

MA Norwood
JMG Inc
36 Plimpton Ave
617-762-5333

MI Southfield
R C Merchant & Co Inc
29260 Franklin Rd
313-354-4300

MI St Joseph
R C Merchant & Co Inc
505 Pleasant St
616-983-7378

MN Minneapolis
Production Equipment &
Components
7803 Bloomington Ave S
612-854-6191

MO Kansas City
Forristal-Young Sls Co
9010 E 50 Hwy
816-358-6771

MO St Louis
Forristal-Young Sls Co
7110 Oakland Av
314-645-2360

NE Omaha
Forristal-Young Sls Co
11312 Martha Av
402-333-0800

NJ Cherry Hill
Trinkle Sls Inc
1010 Haddonfield-Berlin Rd
609-795-4200

NJ Englewood
Baum & Epstein Assoc Inc
40 N Van Brunt St
201-569-7600

NM Albuquerque
Zeus Inc
310 Val Verde SE
505-268-3941

NY Rochester
L-Mar Assoc
4515 Culver Rd
716-544-8000

NY E Syracuse
L-Mar Assoc
216 Tilden Dr
315-437-7779

NY Endicott
L-Mar Assoc
921 Rogers St
607-748-1482

NC Charlotte
Cartwright & Bean Inc
1165 S Commercial Ave
704-377-5673

NC Raleigh
Cartwright & Bean Inc
3948 Browning Pl
919-781-6560

OH Cincinnati
Baehr, Greenleaf & Assoc Inc
9505 Montgomery Rd
513-891-3826

OH Columbus
Baehr, Greenleaf & Assoc Inc
1429 King Ave
614-486-4046

OH Lakewood
Baehr, Greenleaf & Assoc Inc
14700 Detroit Ave
216-221-9030

OH Dayton
Baehr, Greenleaf & Assoc Inc
3300 S Dixie Dr
513-293-1102

OR Portland
Earl & Brown Co Inc
7719 SW Capitol Hwy
503-245-2283

TN Knoxville
Cartwright & Bean Inc
8705 Unicorn Dr
615-693-7450

TX Dallas
Erickson Sls Inc
8350 Meadow Rd
214-739-5833

TX Houston
Erickson Sales Inc
6833 S Gessner
713-498-2959

TX Austin
Erickson Sales Inc
2525 Wallingwood Dr
512-327-5486

UT Salt Lake City
Zeus Inc
444 S 300 W
801-534-0500

WA Seattle
Earl & Brown Co Inc
320 2 West
206-284-1121

WI Milwaukee
Ind Reps Inc
631 N Mayfair Rd
414-259-0965

SOLID STATE TECHNOLOGY INC
160 New Boston Street
Woburn, MA 01801
617-935-3910
Contact: Jack Roy
■ Products & Services
Programmable terminals

SORBUS INC
150 Allendale Rd
King of Prussia, PA 19406
215-265-6700
Advertising page 155
Contact: Bill Whelan
■ Products & Services
Electrical-parameters test equipment
Technical control centers
Maintenance organizations

Branch Sales Offices:

AL Homewood
Sorbus Inc
2805 Crescent Ave
205-871-5783

AL Mobile
Sorbus Inc
404-457-5544

AK Phoenix
Sorbus Inc
602-246-1085

AK Tucson
Sorbus Inc
2030 E Broadway
602-622-4983

AR Little Rock
Sorbus Inc
501-372-2214

CA San Rafael
Sorbus Inc
4340 Redwood Hwy
415-472-4770

CA San Leandro
Sorbus Inc
14826 Wicks Blvd
415-483-9862

CA Sacramento
Sorbus Inc
3400 Watt Ave
916-488-5029

CA Stockton
Sorbus Inc
209-462-5882

CA San Jose
Sorbus Inc
1101 S Winchester Blvd
408-984-1947

CA Fresno
Sorbus Inc
209-445-1768

CA Burbank
Sorbus Inc
4201 Vanowen Pl
213-843-4441

CA Santa Barbara
Sorbus Inc
805-643-3787

CA San Diego
Sorbus Inc
7370 Opportunity Rd
714-565-7905

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CO	Denver Sorbus Inc 6000 E Evans Ave 303-758-5059	KS	Wichita Sorbus Inc 309 S Laura 316-262-2983	NM	Albuquerque Sorbus Inc 505-243-0102
CO	Colorado Springs Sorbus Inc 303-473-4640	KY	Louisville Sorbus Inc 317-638-7877	NY	Melville Sorbus Inc 516-420-0115
CT	East Hartford Sorbus Inc 800 Silver Ln 203-569-0880	LA	Metairie Sorbus Inc 3330 Lake Villa Dr 504-887-9131	NY	White Plains Sorbus Inc 470 Manaroneck Ave 914-761-3801
FL	Tampa Sorbus Inc 5401 W Kennedy Blvd 813-877-5937	LA	Shreveport Sorbus Inc 714 Grand Ave 318-221-2315	NY	Rochester Sorbus Inc 999 Buffalo Rd 716-235-6820
FL	Cocoa Beach Sorbus Inc 813-877-8771	LA	Monroe Sorbus Inc 318-323-1082	NY	Cheektowaga Sorbus Inc 4245 Union Rd 716-631-9230
FL	Pensacola Sorbus Inc 404-457-5544	MD	Baltimore Sorbus Inc 1900 Sulphur Springs Rd 301-242-2336	NY	Albany Sorbus Inc 845 Central Ave 518-438-6201
GA	Atlanta Sorbus Inc 404-394-8994	MA	Natick Sorbus Inc 209 W Central St 617-237-4550	NY	Elmira Sorbus Inc 1408 Lake St 518-438-6201
GA	Atlanta Sorbus Inc 2231 Perimeter Park 404-457-4451	MI	Livonia Sorbus Inc 29200 Vassar Ave 313-478-8700	NY	Syracuse Sorbus Inc 202 Arterial Rd 518-438-6201
GA	Macon Sorbus Inc 404-457-4451	MI	Saginaw Sorbus Inc 517-752-6241	NY	New York Sorbus Inc 122 E 42 St 212-867-4130
HI	Honolulu Sorbus Inc 765 Amana St 808-941-7477	MI	Battle Creek Sorbus Inc 616-968-1162	NY	Hicksville Sorbus Inc 70 E Old Country Rd 516-681-8176
ID	Boise Sorbus Inc 21 N Orchard 208-342-6421	MI	Flint Sorbus Inc 313-235-5921	NC	Charlotte Sorbus Inc 5700 Executive Center Dr 704-535-6970
IL	Elmhurst Sorbus Inc 918 N Oaklawn Ave 312-279-0070	MI	Lansing Sorbus Inc 517-489-6239	NC	Asheville Sorbus Inc 704-372-2941
IL	Peoria Sorbus Inc 309-674-7541	MI	Wyoming Sorbus Inc 1945 28 SW 616-538-5770	OH	Cincinnati Sorbus Inc 8075 Reading Rd 513-821-6300
IL	Springfield Sorbus Inc 217-544-8151	MN	Minneapolis Sorbus Inc 430 Oak Grove St 612-870-8974	OH	Kettering Sorbus Inc 1582 W Dorothy Ln 513-821-6300
IL	Moline Sorbus Inc 309-797-3232	MN	Duluth Sorbus Inc 218-722-1564	OH	Findlay Sorbus Inc 419-422-4121
IL	Rockford Sorbus Inc 318 Park Ave 815-965-5208	MO	Maryland Heights Sorbus Inc 929 Fee Fee Rd 314-434-7090	OH	Toledo Sorbus Inc 4427 Talmadge Rd 419-475-5390
IN	South Bend Sorbus Inc 143 Dixie Way S 219-288-6144	MO	St Louis Sorbus Inc 10770 Indian Head 314-429-7406	OH	Cleveland Sorbus Inc 16101 Snow Rd 216-362-7230
IN	Fort Wayne Sorbus Inc 3416 N Anthony Blvd 219-743-3090	MO	Columbia Sorbus Inc 314-449-2318	OH	Youngstown Sorbus Inc 216-759-2886
IN	Indianapolis Sorbus Inc 5335 N Tacoma Ave 317-259-1191	NE	Omaha Sorbus Inc 3321 Hickory St 402-342-6711	OH	Akron Sorbus Inc 1423 Copley Rd 216-836-4958
IA	Des Moines Sorbus Inc 515-262-7945	NV	Reno Sorbus Inc 702-329-2476	OH	Columbus Sorbus Inc 2202 S Hamilton Rd 614-864-7280
KS	Kansas City Sorbus Inc 3500 Rainbow Blvd 913-831-1700	NV	Las Vegas Sorbus Inc 702-735-7802		
		NH	Concord Sorbus Inc 603-225-5533		

OK Tulsa
Sorbus Inc
918-627-8386

OK Oklahoma City
Sorbus Inc
405-232-3989

OR Portland
Sorbus Inc
208 SE Oak St
503-222-3891

OR Salem
Sorbus Inc
503-222-3891

OR Eugene
Sorbus Inc
503-343-1437

PA Cornwells Heights
Sorbus Inc
11 Neshaminy Plaza
215-638-1620

PA Harrisburg
Sorbus Inc
4751 Lindle Rd
717-939-9343

PA Pittsburgh
Sorbus Inc
21 Yost Blvd
412-271-7131

PA Erie
Sorbus Inc
814-454-6510

RI Cranston
Sorbus Inc
1145 Reservoir Ave
401-943-6400

TN Memphis
Sorbus Inc
2005 Nonconah Blvd
901-345-2853

TN Nashville
Sorbus Inc
1451 Elm Hill Pike
901-345-2853

TN Chattanooga
Sorbus Inc
615-265-1335

TN Knoxville
Sorbus Inc
615-525-1271

TN Oak Ridge
Sorbus Inc
615-483-9593

TX Hurst
Sorbus Inc
951 W Pipeline Rd
817-284-9464

TX Dallas
Sorbus Inc
2600 Stemmons Fwy
214-631-1700

TX Waco
Sorbus Inc
871-772-0110

TX Houston
Sorbus Inc
4120 Southwest Fwy
713-621-7930

TX San Antonio
Sorbus Inc
9033 Aero Ln
512-223-3121

TX Austin
Sorbus Inc
512-837-2088

TX Corpus Christi
Sorbus Inc
512-883-8901

TX Ft Hood
Sorbus Inc
817-773-6007

TX Lubbock
Sorbus Inc
806-797-2733

TX El Paso
Sorbus Inc
915-532-7135

UT Salt Lake City
Sorbus Inc
2161 Regent St
801-487-8679

VA Vienna
Sorbus Inc
2095 Chain Bridge Rd
703-893-6698

VA Richmond
Sorbus Inc
2016 N Hamilton St
804-355-2643

VA Norfolk
Sorbus Inc
1 Koger Executive Ctr
804-355-2643

WA Tukwila
Sorbus Inc
637 Strander Blvd
206-575-1202

WA Spokane
Sorbus Inc
206-924-8544

WV Parkersburg
Sorbus Inc
304-422-1323

WI West Allis
Sorbus Inc
9618 W Greenfield Ave
414-257-2715

WI Appleton
Sorbus Inc
414-734-4012

WI Oshkosh
Sorbus Inc
414-734-4012

WI Racine
Sorbus Inc
414-634-3579

WI Wausau
Sorbus Inc
715-845-8107

WI Madison
Sorbus Inc
110 Fordem Ave
608-241-1616

WI Beloit
Sorbus Inc
608-754-8011

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

SOROC TECHNOLOGY INC
165 Freedom Ave
Anaheim, CA 92801
714-992-2860
Contact: Karin Basilio
■ Products & Services
Programmable terminals
Video data terminals (KSR)
Video data terminals (RO)
Branch Sales Offices:
AZ Tempe
Microage
1425 W 12 Pl
213-515-4727
CA Los Angeles
David Jamison Carlyle Corp
2 Century Plaza
213-277-4562

CA Tustin
Terminal Rentals
1542 A Moulton Pkwy
714-832-2414

SOURCE-OF-THE-SOUTH (SOS)

501 N Perry
Montgomery, AL 36104
205-834-1294
Contact: Joe Aardweg
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Automatic answering units
Automatic calling units
Maintenance organizations

SOUTHERN NEW ENGLAND TELEPHONE

227 Church St, 9th Floor
New Haven, CT 06506
203-771-5200
Contact: Glenda Sohl
■ Products & Services
Satellite carriers
Telephone companies
Computerized branch exchange (CBX)
Remote network processors
Digital service units
Lightwave (fiber optic) systems
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modems, broadband, half-group
(to 19.2 kb/s)
Disc drives, floppy
Discs, floppy
Floppy disc recorders
Audio response units
Badge readers
Batch terminals
Data entry terminals
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters
Teleprinters, impact
Teletypewriters
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Automatic answering units
Automatic calling units
Computer/communications interfaces
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Satellite delay compensation units
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Data communications software,
communications processors vendors
Maintenance organizations
Network simulation services

SOUTHERN PACIFIC DISTRIBUTED MESSAGE SYSTEMS

1700 Old Meadow Rd
McLean, VA 22102
703-821-3700
Contact: Win Kelker
■ Products & Services
Facsimile-service carriers
Database processors
Facsimile terminals
Graphic display terminals
Portable data entry terminals
Video data terminals (KSR)
Data communications consultants
Maintenance organizations

Branch Sales Offices:

CA Burlingame
SP/DMS
840 Hinckly
415-697-4992
CA Los Angeles
SP/DMS
610 S Main St
213-629-5461
IL Des Plaines
SP/DMS
2200 E Devon
312-635-8500
MA Boston
SP/DMS
79 Milk St
617-482-8868
MO St Louis
SP/DMS
NY New York
SP/DMS
1500 Broadway
212-921-4070
OH Beachwood
SP/DMS
24200 Chagrin Bl
216-831-5800
PA Philadelphia
SP/DMS
PA Pittsburgh
SP/DMS
312-635-8500
TX Dallas
SP/DMS
VA McLean
SP/DMS
1700 Old Meadow Rd
703-821-3700

SOUTHERN TELEPHONE SUPPLY

PO Box 80375
Atlanta, GA 30366
404-447-8410
Contact: Jim Wright
■ Products & Services
Telephone companies
Multiplexers, statistical (intelligent)
Channel service units
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Programmable terminals

Branch Sales Offices:

CA City of Industry
Southern Telephone Supply Co
17421-A East Gale Ave
213-912-4521
GA Norcross
Southern Telephone Supply Co
6000 Peachtree Ind Blvd
404-447-8410

IN Ft Wayne
Southern Telephone Supply Co
4051 North Clinton
219-482-9161
NE Lincoln
Southern Telephone Supply Co
1400 Cushman Dr
402-423-0584
TN Memphis
Southern Telephone Supply Co
1594 Two Pl
901-346-7312
TX Dallas
Southern Telephone Supply Co
10720 Composite Dr
214-358-1582

SP COMMUNICATIONS

1 Adrian Court
Burlingame, CA 94010
415-692-5600
Contact: William P Listug
■ Products & Services
Facsimile-service carriers
Specialized carriers
Telephone companies
Facsimile terminals
Branch Sales Offices:
AZ Phoenix
SPC Comm
3550 No Central
602-265-5738
CA Los Angeles
SPC Comm
610 S Main St
213-629-6741
CA San Francisco
SPC Comm
One Adrian Ct
415-692-5600
CA Sacramento
SPC Comm
8750 Merribrook Dr
916-361-7135
CA San Diego
SPC Comm
8304 Claremont Mesa Blvd
714-292-9636
CT Stamford
SPC Comm
300 Broad St
203-348-7036
CT East Hartford
SPC Comm
111 Founders Plz
203-568-7112
GA Atlanta
SPC Comm
4250 Perimeter Park S
404-452-1515
IL Chicago
SPC Comm
150 South Wacker Dr
312-372-4656
IN Indianapolis
SPC Comm
One Indiana Sq
317-635-4246
LA New Orleans
SPC Comm
226 Carondelet St
504-523-4444
MD Baltimore
SPC Comm
Eight Charles Plz
301-659-0100
MA Boston
SPC Comm
79 Milk St
617-482-8420

MA Woburn
SPC Comm
27 Gill St
617-482-8420
MI Birmingham
SPC Comm
30600 Telegraph Rd
313-645-6100
MN Minneapolis
SPC Comm
1409 Willow
612-871-3400
MO Overland Park
SPC Comm
6405 Metcalf
913-432-4811
MO Maryland Heights
SPC Comm
650 Fee Fee Rd
314-432-1446
NJ Teaneck
SPC Comm
140 Amsterdam Ave
201-837-1452
NY New York
SPC Comm
211 East 43rd St
212-557-0700
NY Glenmont
SPC Comm
Box 14
518-458-2000
NY Buffalo
SPC Comm
14 Lafayette Sq
716-854-2116
NY Great Neck
SPC Comm
505 Northern Blvd
516-482-8830
NY Rochester
SPC Comm
45 Exchange St
716-325-6476
NY Syracuse
SPC Comm
1900 Brewerton Rd
315-422-9885
OH Cincinnati
SPC Comm
313 Dixie Terminal Bldg
513-241-8740
OH Lakewood
SPC Comm
14600 Detroit Ave
216-221-1444
OH Columbus
SPC Comm
2242 S Hamilton Rd
614-868-5357
OK Tulsa
SPC Comm
522 South Boston
918-587-2221
PA Pittsburgh
SPC Comm
429 Fourth Ave
412-261-9022
PA Philadelphia
SPC Comm
117 S 17 St
215-568-4338
RI Providence
SPC Comm
915 Industrial Bank Bldg
401-274-5636
TX Dallas
SPC Comm
13520 Inwood Rd
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SPC Comm
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713-974-4444

VA Arlington
SPC Comm
1500 Wilson Blvd
703-527-4929

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SPC Comm
281 Independence Blvd
804-499-5652

WI Milwaukee
SPC Comm
6915 W Fond du Lac Ave
414-463-9200

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breaks?
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SPECTRON, A DIV OF NORTHERN TELECOM INC

344 New Albany Rd
Moorestown, NJ 08057
609-234-5700
Advertising page 79
Contact: Kirby Holmes
■ Products & Services
Modem sharing units
Port sharing units
Line drivers
Modems, limited distance
Modem eliminators
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
Network management centers
Technical control centers
Programmable terminals
Teleprinters, non-impact
Video data terminals (KSR)
Video data terminals (RO)
Cables, electrical prefabricated extending
Data jacks and plugs
Furniture, cabinets, terminal enclosures
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic
Switches, data communications, manual
Data communications consultants
Educational services
Network simulation services
Teleprocessing monitors

Branch Sales Offices:

AZ Phoenix
Zeus
546 E Portland
602-253-6101

CA Sunnyvale
Spectron
292 Gilbralter Dr
408-734-4016

CA Anaheim
Spectron Corp
1725 S Douglass Rd
714-993-9249

CO Denver
Zeus
3333 Quebec St
303-321-4246

FL Miami
Cook Electric Int'l

GA Atlanta
Spectron
404-448-4865

IL Lombard
Spectron
405 S Eisenhower Ln
312-620-8777

MD Silver Springs
Computer Complements
1110 Fidler La
301-589-2802

MA Wellesly
Datamart
180 Linden St
617-235-5520

MI Detroit
Spectron
313-559-4544

MN Minneapolis
Spectron
612-472-3633

MO Clayton
Information Products
230 S Bemiston
314-721-0401

MO Independence
Information Products
1201 Randall Rd
316-252-3700

NE Omaha
Information Products
5705 S 152 Ave
402-895-5850

NJ Mt Laurel
Spectron
127 Gaither Dr, Suite B
609-234-8440

NJ Moorestown
Spectron
344 New Albany Rd
609-234-5700

NM Albuquerque
Zeus
310 Vale Verde SE
505-268-3941

NY Suffern
Spectron
222 Rt 59 Ramapo
914-357-5331

OH Columbus
Spectron
614-846-2983

PA Pittsburgh
Spectron
412-327-8050

TX Richardson
Spectron
300 N Central Expwy
214-690-3451

TX Houston
Spectron
713-686-2072

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Buenos Aires
Racal-Milgo
Balcace
26-6001/10

AUSTRALIA
North Sidney
Datacraft Pty Ltd
41 McLaren St
922-5358

AUSTRALIA
Croydon, Victoria
Datacraft Pty Ltd
Box 353
725-5477

AUSTRIA
Munchen
Wetronic Automation
Claude Lorrain Str 29
652096

BELGIUM
Bruxelles
Telindus SA
Kroonlaan 357; Ave de la
Couronne
846-22760

BOLIVIA
Lima
Cantec SA
Casilla 2489
245461

BRAZIL
Sao Paulo
Elebra SA
Av Bogaert
272-4255

CHILE
Santiago
Controles Y Senales Ltda
PO Box 14627
391-241

COLOMBIA
Bogota
Coldatos Ltda
Calle 30A #622; Oficina 2802
69-89-38

DENMARK
Valby
BLT Agenturer A/S
GL Koege Landevej 55
161100

ECUADOR
Quito
Iseyco C/A Ltd
Dept 601
231417

ENGLAND
Tring, Herts
General Audio & Data Comm Ltd
70/81 Akeman St
44-442824011

FINLAND
Espoo
OY Emmett AB
Itaportti 1 E-F
009358/0882044

FRANCE
Paris
Elexo, SA
BP 24
9302880

GERMANY, WEST
Muenchen
Wetronic Automation GmbH
Claude-Lorrain-Str 29
089-49-652096

HONG KONG
Causeway Bay
Datacraft Pty Ltd
2-20 Paterson St
5-769078

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9A Connaught Pl
343254

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EL-UL Technologies Ltd
35 Shaul Hamelich Blvd
221093/240297

ITALY

Milano
Elettronucleonica SPA
Piazza de Angeli 7
4982451

JAPAN

Osaka
Toyo Corp
Suzuki Bldg 2-38
Junkeimachidori;Minami-Ku
06-262-3471

JAPAN

Nagoya
Toyo Corp
1554 Issha Nakanedori-Ue;
Idako-Cho Meito-ku
052-772-2971

JAPAN

Tokyo
Toyo Corp
2, 1-Chome
Hongoku-cho;Nihonbushi Chuc
03-279-0771

KOREA REP (REP)

Seoul
KDC
Box 5956
73-8555

MALAYSIA FED OF

Kuala Lumpur
Racal Electronics Pte Ltd
Jalan Raja Chulan
205962

MEXICO

Mexico 4, DF
Datatron, SA
Carpio 253
541-69-72

NETHERLANDS

The Hague
Koning en Hartman
Box 43220
3170210101

NEW ZEALAND

Lower Hutt
Datacraft
417 Cuba St
661387

NORWAY

Oslo
Bergman & Plesner,
Instrumentering A/S
Box 12, Veitvet
00947-2162210

SINGAPORE

Singapore
Racal Electronics Pte Ltd
Magazine Rd
39098

SOUTH AFRICA

Randburg
Grinel Data Systems
2125 Transvaal
789-1441

SPAIN

Madrid
Emeco
Azuli
458-0645

SWEDEN

Upplands Vasby
Johan Lagercrantz KB
Box 48
0760-86120

SWITZERLAND

Lausanne
Datelec SARL
Rue De Bourg 27;CH 1002
021-229238

TAIWAN

Taipei
Fairstar Corp
Box 68-1547

THAILAND

Bangkok
Anglo-Thai Engineering Ltd
Box 18;137 Wireless Rd
252-5091

VENEZUELA

Chacao-Caracas
Datatec CA
Apartado Postal 60216
239-4222

SPERRY UNIVAC

PO Box 500
Blue Bell, PA 19424
215-542-4011
■ Products & Services
Front-end processors
Minicomputers
Modem sharing units
Remote network processors
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Cassettes
Cassette drives
Disc drives, floppy
Tape, magnetic
Tape drives, magnetic
Tape punch/reader, paper
Bar code readers
Batch terminals
Programmable terminals
Interactive terminals
Remote line printers
Remote job entry terminals
Video data terminals (KSR)
Data communications consultants

Branch Sales Offices:

AL Birmingham
Sperry Univac
2 Metroplex Dr
205-871-4655
AZ Phoenix
Sperry Univac
301 W Osborn Rd
602-264-3565
CA Los Angeles
Sperry Univac
10880 Wilshire Blvd
213-475-8661
CA Los Angeles
Sperry Univac
3250 Wilshire Blvd
213-381-7841
CA Sacramento
Sperry Univac
621 J St
916-444-3480
CA San Francisco
Sperry Univac
Three Embarcadero Center
415-433-0750
CO Englewood
Sperry Univac
7503 Marin Dr
303-773-1177

CT

Milford
Sperry Univac
30 Commerce Park Rd
203-877-1281

CT

Windsor
Sperry Univac
90 Lamberton Rd
203-688-6461

FL

Miami Beach
Sperry Univac
8395 NW 53rd St
305-651-0734

GA

Atlanta
Sperry Univac
5775 C Peachtree
404-256-5690

IL

Chicago
Sperry Univac
5725 NE River Rd
312-693-4600

IL

Chicago
Sperry Univac
300 N State St
312-527-3000

IN

Indianapolis
Sperry Univac
3500 DePauw Blvd
317-297-4686

IA

W Des Moines
Sperry Univac
1025 Ashworth Rd
515-223-2800

KS

Shawnee Mission
Sperry Univac
4210 Johnson Dr
913-362-4770

LA

Baton Rouge
Sperry Univac
7600 Airline Hwy
504-924-7211

MD

Patuxent River
Sperry Univac
Rt 1 Box 2
301-825-8410

MA

Wellesley
Sperry Univac
55 William St
617-237-9516

MI

Troy
Sperry Univac
3221 N Big Beaver Rd
313-444-4910

MN

Bloomington
Sperry Univac
3001 Metro Dr
612-854-1331

MO

St Louis
Sperry Univac
12101 Woodcrest Exec Dr
314-727-2590

NJ

Montclair
Sperry Univac
205 Claremont Ave
201-783-5500

NY

Albany
Sperry Univac
1500 Central Ave
518-869-0231

NY

Williamsville
Sperry Univac
5500 Main St
716-633-2700

NY

New York
Sperry Univac
1290 Ave the Americas
212-956-2121

NY

Huntington Sta
Sperry Univac
1 Huntington Quadrangle
516-420-1108

NC Charlotte
Sperry Univac
301 S McDowell St
704-375-1491

OH Cincinnati
Sperry Univac
7162 Reading Rd
513-351-6100

OH Independence
Sperry Univac
4500 Rockside Rd
216-447-0700

OK Tulsa
Sperry Univac
7030 S Yale
918-492-4440

PA Wayne
Sperry Univac
480 Swedesford Rd
215-293-0300

PA Lemoyne
Sperry Univac
Erford Rd Rte 15
717-234-3141

PA Pittsburgh
Sperry Univac
Stanwix at 4 Ave
412-391-2000

TN Memphis
Sperry Univac
1355 Lynnfield Rd
901-761-2740

TX Bellaire
Sperry Univac
6700 W Loop S
713-661-2053

TX Houston
Sperry Univac
3 Greenway Plaza E
713-623-8700

TX Dallas
Sperry Univac
7540 LBJ Freeway
214-387-1100

TX Austin
Sperry Univac
512 E Riverside Dr
512-444-6653

VA Arlington
Sperry Univac
1901 N Moore St
703-841-1122

VA Arlington
Sperry Univac
1501 Wilson Blvd
703-841-1122

WA Seattle
Sperry Univac
Box 21108
206-682-1593

WI Brookfield
Sperry Univac
200 Executive Dr
414-784-4000

ALBERTA, CANADA
Calgary
Sperry Univac
81-110 12th Ave SW
403-269-6741

ALBERTA, CANADA
Edmonton
Sperry Univac
9942 108th St
403-429-4268

BRITISH COLUMBIA, CANADA
Vancouver
Sperry Univac
#906-1177 W Hastings St
604-688-6731

MANITOBA, CANADA

Winnipeg
Sperry Univac
305 Broadway Ave
204-942-5221

ONTARIO, CANADA

Mississauga
Sperry Univac
55 City Centre Dr
416-270-3030

ONTARIO, CANADA

Ottawa
Sperry Univac
85 Albert St
613-237-4423

ONTARIO, CANADA

Hamilton
Sperry Univac
105 Main St E
416-525-8433

ONTARIO, CANADA

Toronto
Sperry Univac
181 University Ave
416-962-5250

QUEBEC, CANADA

Montreal
Sperry Univac
2050 Place du Canada
514-875-5432

QUEBEC, CANADA

Quebec City
Sperry Univac
2 Place Quebec
418-647-2323

If you know the name of the product, you can find out who makes it in the **Products & Services Directory, page 5.**

SPERRY UNIVAC, MCO

2722 Michelson Drive
Irvine, CA 92713
714-754-6900
Contact: S Hubner
■ Products & Services
Concentrators
Minicomputers
Remote network processors
Modem eliminators
DDP systems
Add-on main memory
Cartridges
Cartridge drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Tape, paper
Batch terminals
Programmable terminals
Interactive terminals
Teletypewriters
Computer/communications interfaces
Data communications software, distributed
data processing system vendors
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Sperry Univac
301 W Osborn Rd
602-277-1923

AR Little Rock
Sperry Univac
1500 Riverfront Dr
501-664-4280

CA Orange
Sperry Univac
600 City Parkway W
714-937-0678

CA San Diego
Sperry Univac
4393 Viewridge Ave
714-268-3600

CA Santa Clara
Sperry Univac
3300 Scott Blvd
408-496-3333

CA San Francisco
Sperry Univac
3 Embarcadero Center
415-771-1100

CA Los Angeles
Sperry Univac
3250 Wilshire Blvd
213-380-5500

CO Englewood
Sperry Univac
7503 Marin Dr
303-773-1177

CT Wethersfield
Sperry Univac
1290 Silasdeane Hwy
203-688-6461

DC Washington
Sperry Univac
2233 Wisconsin Ave

FL Orlando
Sperry Univac
3165 McCrory Pl
305-894-8431

FL Miami
Sperry Univac
8395 NW 53rd St

GA Atlanta
Sperry Univac
5775 C Peachtree-Dunwoody Rd NE
404-256-5690

IL Chicago
Sperry Univac
1111 E Touhy Avenue
312-693-4600

KY Louisville
Sperry Univac
2150 First National Tower
502-582-2563

LA Metairie
Sperry Univac
2800 Veterans Hwy
504-838-8023

MD Lutherville
Sperry Univac
1300 Bellona Ave
301-825-8410

MA Wellesley
Sperry Univac
60 William St
617-237-1000

MI Troy
Sperry Univac
3221 Big Beaver Rd
313-649-0400

MN Minneapolis
Sperry Univac
3001 Metro Dr
612-854-1331

MO St Louis
Sperry Univac
12101 Woodcrest Executive Dr
314-576-7000

NY Rochester
Sperry Univac
160 Allens Creek Rd
716-442-1880

- NY New York
 Sperry Univac
 1290 Ave of the Americas
 212-956-2170
- NC Charlotte
 Sperry Univac
 301 S McDowell St
 704-375-1491
- OH Independence
 Sperry Univac
 4500 Rockside Rd
 216-447-0700
- OH Dayton
 Sperry Univac
 5160 Springfield Pike
 513-258-1458
- OK Tulsa
 Sperry Univac
 7030 S Yale
 918-492-4440
- OR Portland
 Sperry Univac
 5901 SW MacAdam Ave
 503-227-0585
- PA Wayne
 Sperry Univac
 12 Valley Forge Executive Mall
 215-293-0300
- PA Pittsburgh
 Sperry Univac
 Cliff Mine Rd
 412-788-6960
- TX El Paso
 Sperry Univac
 4141 Pinnacle
 915-533-9865
- TX Dallas
 Sperry Univac
 7540 LBJ Freeway
 214-387-1100
- TX Bellaire
 Sperry Univac
 6700 West Loop S
 713-661-2053
- TX Austin
 Sperry Univac
 220 E Foremost
 512-282-3200
- VA Williamsburg
 Sperry Univac
 21 Ensign Spence
 804-229-4327
- WA Seattle
 Sperry Univac
 330 12th Ave NE
 206-454-3930
- WI Brookfield
 Sperry Univac
 200 Executive Dr
 414-784-4000
- SP TELECOMMUNICATIONS
 PROCESSING CO**
 211 E 43 St
 New York, NY 10017
 212-697-2306
 Contact: Joseph McAniff
 ■ Products & Services
 International record carriers
 Message (including telegraph) carriers
 Specialized carriers
 Value-added carriers
 Branch Sales Offices:
 CA San Francisco
 SPTP Sales Office
 55 New Montgomery St
 415-777-5409
- STANDARD ELECTRIC TIME CORP**
 89 Logan St
 Springfield, MA 01101
 413-732-1141
 Contact: Larry Baxter
 ■ Products & Services
 Fire detection/protection equipment
 Furniture, cabinets, terminal enclosures
 Used equipment
 Branch Sales Offices:
 MA Springfield
 Standard Electric Time Corp
 89 Logan St
 413-732-1141
- STANDARD MICROSYSTEMS**
 35 Marcus Blvd.
 Hauppauge, NY 11787
 516-273-3100
 Contact: Vince Rende
 ■ Products & Services
 Terminal controllers
 Computer/communications interfaces
- STANFORD TELECOMMUNICATIONS
 INC**
 1195 Bordeaux Dr
 Sunnyvale, CA 94086
 408-734-5300
 Contact: P Marshall Fitzgerald
 ■ Products & Services
 Satellite carriers
 Specialized carriers
 Multiplexers, time division
 Earth stations
 Modems, broadband group (to 50 kb/s)
 Modems, broadband, super-group
 (to 230.4 kb/s)
- STANTRON DIV
 WYCO METAL PROD**
 6918 Beck Ave
 N Hollywood, CA 91605
 213-875-0800
 Contact: Guy A Tessier
 ■ Products & Services
 Furniture, cabinets, terminal enclosures
 Branch Sales Offices:
 AZ Phoenix
 Shefler Kahn Co
 2017 N 7 St
 602-257-9015
 CA Los Angeles
 Ed Landa Co
 1618 Cotner Av
 213-879-0770
 CA Pleasanton
 Moulthrop Sales
 7080 Commerce Dr
 415-846-0550
 CO Golden
 J F Hurlbut Co
 622 Gardenia Ct
 303-279-7796
 CT Canton Center
 Tekdata
 Cherry Brook Rd
 203-693-0719
 FL Hollywood
 Wallace Electronics
 Box 7376
 305-961-6640
 GA Jonesboro
 Wallace Electronics
 8571 Kennesaw Ct
 404-471-6297
 IL Chicago
 Berndt Assoc
 6200 N Hiawatha Ave
 312-283-0713
- IN Carmel
 Berndt Assoc
 11016 Braewick Dr
 317-844-0114
- KS Shawnee Mission
 Midtec
 6912 Marion
 913-441-6565
- MD Towson
 Scientific Assoc
 8 Witherwood
 301-321-1411
- MA Chelmsford
 Tekdata
 6 Kidder Rd
 617-245-5940
- MI Jackson
 Norwood Scroggs Co
 2221 Arbor Hills Rd
 517-750-1170
- MN Minneapolis
 Berndt Assoc
 2738 Winnetka Ave No
 612-546-2021
- NJ Wayne
 GT Assoc
 1341 Hamburg Tnpk
 201-694-6040
- NM Albuquerque
 Shefler Kahn Co
 10200 Menaul NE
 505-296-0749
- NY Rochester
 Gislason Sales
 82 St Paul St
 716-454-4741
- NC Kernersville
 Wallace Electronics
 Box 526
 919-996-2742
- OH Cincinnati
 John O Olsen
 781 Neeb Rd
 513-451-5995
- PA Pittsburgh
 John O Olsen
 104 Elatan Dr
 412-279-2550
- TN Chattanooga
 Wallace Electronics
 Box 879
 615-870-2080
- TX Richardson
 Barry Sales
 709 Lingco Dr
 214-234-0255
- TX Houston
 Barry Sales
 6400 Westpark Dr
 713-784-5860
- TX Houston
 C E L
 7114 Winding Walk
- VA Fairfax
 Scientific Assoc
 9512 A Lee Hwy
 703-385-0600
- WA Seattle
 Don Smith Sales
 711 N Northlake Way
 206-633-3160
- WI Milwaukee
 Berndt Associates
 9401 Beloit Rd
 414-545-8400
- INDIA**
 Huq Manson
 Aurora Intl
 13/2 Toynbee Circular Rd

ISRAEL

Tel Aviv
RCM Computers Ltd
Feierberg St 24

PHILIPPINES

Manila
Educational Enrichment Ctr
405 Altura St

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

STC COMMUNICATIONS CORP
SUB OF STORAGE TECHNOLOGY CORP

3400 Industrial Ln
Broomfield, CO 80020
303-673-8000
Contact: Kevin Eggleston
■ Products & Services
Voice digitizers
Branch Sales Offices:

CA San Francisco
Storage Technology Corp
2001 Union St
415-563-2824

CA Los Angeles
Storage Technology Corp
10801 National Blvd
213-475-9678

GA Atlanta
Storage Technology Corp
5600 Roswell Rd W
404-256-2678

IL Chicago
Storage Technology Corp
223 S Wacker Dr
312-876-1528

MD Silver Springs
Storage Technology Corp
10750 Columbia Pike
301-593-9660

MI Southfield
Storage Technology Corp
3000 Town Center
313-354-0850

NJ Mountainside
Storage Technology Corp
1299 Rte 22
201-233-7981

NY New York
Storage Technology Corp
405 Lexington Ave
212-972-9484

PA Pittsburgh
Storage Technology Corp
200 Fleet St
412-922-2971

TX Dallas
Storage Technology Corp
14200 Midway Rd
214-387-4845

ENGLAND
London
Storage Technology Corp Ltd
10-12 Old Court Pl Kensington
937-9638

FRANCE
Maurepas
Storage Technology Corp SA
5 Allée du Bourbonnais 78310

STEWART WARNER DATAFAX CORP

1300 N Kostner Ave
Chicago, IL 60651
312-292-3268
Contact: T O Doner

STORAGE TECHNOLOGY CORP

2270 S 88th St
Louisville, CO 80027
303-673-5151

Contact: John C Scott
■ Products & Services
Concentrators
Add-on main memory
Cartridge drives
Disc drives, large
Tape drives, magnetic

Branch Sales Offices:

AL Birmingham
Storage Technology Corporation
213 Gadsden Hwy
205-836-1939

AZ Phoenix
Storage Technology Corporation
5039 N 19th Ave
602-997-7255

CA Huntington Beach
Storage Technology Corp
16162 Beach Blvd
714-848-8989

CA San Francisco
Storage Technology Corp
2001 Union St
415-563-2824

CA Los Angeles
Storage Technology Corp
10801 National Blvd
213-470-2675

CA Walnut Creek
Storage Technology Corporation
47 Quail Ct
415-932-0516

CA La Jolla
Storage Technology Corporation
3344 N Torrey Pines Ct
213-470-2675

CT East Hartford
Storage Technology Corp
53 Connecticut Blvd
203-568-8980

CT Georgetown
Storage Technology Corporation
4 Old Mill Rd
203-544-9357

CT Denver
Storage Technology Corporation
7290 Samuel Dr
303-427-6254

FL Winter Park
Storage Technology Corporation
400 N New York Ave
305-647-2314

FL Hollywood
Storage Technology Corporation
1720 Harrison Street
305-922-4503

FL Tampa
Storage Technology Corp
5601 Mariner St
813-877-8195

FL Jacksonville
Storage Technology Corp
1914 Beachway Rd
904-396-0144

GA Atlanta
Storage Technology Corp
5600 Roswell Rd NE
404-256-2678

IL Chicago
Storage Technology Corp
233 S Wacker Dr
312-876-1520

IL Peoria
Storage Technology Corporation
414 Hamilton Blvd
309-676-4605

IL Springfield
Storage Technology Corporation
1 West Old State Capitol Plaza
217-525-1165

IN Indianapolis
Storage Technology Corporation
101 W Washington St
317-634-2729

IA Des Moines
Storage Technology Corporation
600 5th Ave Plaza
515-282-4377

KS Shawnee Mission
Storage Technology Corporation
4220 Johnson Dr
913-236-7744

KY Louisville
Storage Technology Corporation
945 S 4th St
502-589-4108

MD Silver Spring
Storage Technology Corp
10750 Columbia Pike
301-593-9660

MD Baltimore
Storage Technology Corp
6041 Security Blvd
301-594-1084

MD Baltimore
Storage Technology Corp
20 S Charles St
301-962-5503

MA Waltham
Storage Technology Corporation
391 Totten Pond Rd
617-890-9114

MI Southfield
Storage Technology Corp
3000 Town Center
313-354-0850

MI E Lansing
Storage Technology Corporation
4970 Northwind Dr
517-332-8609

MN Minneapolis
Storage Technology Corporation
3050 Metro Dr
612-854-7556

MS Jackson
Storage Technology Corporation
1755 Leila Dr
601-981-5556

MO Clayton
Storage Technology Corp
230 S Bemiston Ave
314-721-1000

NE Omaha
Storage Technology Corp
7171 Mercy Road
402-397-5708

NJ Mountainside
Storage Technology Corporation
1299 US Route 22
201-233-7981

NY New York
Storage Technology Corp
405 Lexington Ave
212-972-9484

NY Hicksville
Storage Technology Corporation
161 Levittown Pkwy
516-938-9899

NY Mount Kisco
Storage Technology Corporation
4 Kenilworth Dr
914-241-3662

NY Rochester
Storage Technology Corporation
120 Allens Creek Rd
716-442-1400

NC Charlotte
Storage Technology Corporation
Woodlawn Green Woodlawn Rd
704-523-2543

NC Greensboro
Storage Technology Corporation
2306 W Meadowview Rd
919-852-0675

OH Cleveland
Storage Technology Corp
1300 E 9 St
216-621-0254

OH Cincinnati
Storage Technology Corporation
120 West 5th St
513-381-0125

OH Columbus
Storage Technology Corporation
1631 Northwest Prof Plaza
614-451-7491

OK Tulsa
Storage Technology Corporation
4833 S Sheridan Rd
918-664-8450

OK Oklahoma City
Storage Technology Corp
2200 Classen
405-521-8934

OR Portland
Storage Technology Corporation
6443 SW Beaverton Hwy
503-292-0739

PA Bala Cynwyd
Storage Technology Corp
111 Presidential Blvd
215-667-3327

PA Pittsburgh
Storage Technology Corporation
200 Fleet St
412-922-2971

TN Nashville
Storage Technology Corporation
4741 Trousdale Dr
615-331-6859

TX Dallas
Storage Technology Corp
14330 Midway Rd
214-387-4845

TX Houston
Storage Technology Corp
8552 Katy Fwy
713-464-3022

TX San Antonio
Storage Technology Corp
Parkway Plaza 10202 Heritage
512-340-0424

UT Salt Lake City
Storage Technology Corporation
1331 State
801-486-3433

VA Richmond
Storage Technology Corporation
6767 Forest Hill Ave
804-272-3212

WA Mercer Island
Storage Technology Corporation
3010 77th Ave
206-232-2004

WI Milwaukee
Storage Technology Corporation
622 N Water St
414-276-2022

ALBERTA, CANADA
Edmonton
Storage Technology of Canada Ltd
10235-101 St
403-428-0998

BRITISH COLUMBIA, CANADA
Vancouver
Storage Technology of Canada Ltd
2210 650 W Georgia St
604-687-3646

ONTARIO, CANADA
Rexdale/Toronto
Storage Technology of Canada Ltd
272 Galaxy Blvd
416-675-3350

ONTARIO, CANADA
Ottawa
Storage Technology of Canada Ltd
Tower A Place de Ville
613-237-8886

QUEBEC, CANADA
Montreal
Storage Technology of Canada Ltd
1 Place de Commerce
514-761-5861

QUEBEC, CANADA
St Foy
Storage Technology of Canada Ltd
399 Rue Morse
418-683-5542

AUSTRALIA
Artarmon
Storage Technology of Australia
Pty Ltd
401 Pacific Hwy
61-2-438-3088

BELGIUM
Bruxelles
Storage Technology
International/SA
47 Boulevard du Souverain
32 2 660-4948

ENGLAND
London
Storage Technology Ltd
10-12 Old Court Pl, Kensington
441-937-9638

ENGLAND
Middlesex
Storage Technology Limited
2 Rubastic Rd Southall
44 1 571-0062

FRANCE
78310 Maurenas
Storage Technology
Corporation/SA
5 Allee du Bourbonnais
33 3 051-6146

GERMANY, WEST
Frankfurt
Storage Technology GmbH
Genferstrasse 11

GERMANY, WEST
Duesseldorf-Heerd
Storage Technology GmbH
Burgunderstrasse 9
49 211 500032

GERMANY, WEST
Hamburg
Storage Technology GmbH
Alte Volksparkstrasse 24
49 40 544931

GERMANY, WEST
Hannover
Storage Technology GmbH
Raschplatz 5
49 511 333217

GERMANY, WEST
Munich
Storage Technology GmbH
Plinganserstrasse 112
49 89 7231051

GERMANY, WEST
Storage Technology Corporation
Viahingerstrasse 3;7000
Stuttgart 80
49 711 714836

GUYANA
Camp Hill
Storage Technology Corporation
1104 Fernwood Ave
717-761-3630

ITALY
Roma
Storage Technology Italia SPA
Via Birmania 83
39 6 5921193

ITALY
Milan
Storage Technology Italia SPA
Corso Europa 12
39 2 5456331

JAPAN
Minato-ku, Tokyo
STC Japan Ltd
Taneda Bldg 8F 2-5 1-Chrome;Moto
Akasaka
8143-470-4871

NETHERLANDS
Amstelveen
Storage Technology/BV
Maalderij 21 1185 ZB
31 20 472231

STROMBERG-CARLSON CORP
1000 N Ashley Dr
Tampa, FL 33601
813-273-5200
Contact: Donald L Hoffman
■ Products & Services
Computerized branch exchange (CBX)

Branch Sales Offices:

CA Foster City
Stromberg-Carlson
551 Pilgrim Dr
415-574-9211

GA Norcross
Stromberg-Carlson
1862 Enterprise Dr
404-448-8980

IL Schaumburg
Stromberg-Carlson
830 E Higgins Rd Box 6543
312-885-6543

MO Kansas City
Stromberg-Carlson
2700 Rockcreek Pkwy
816-421-6618

STSC INC
7316 Wisconsin Ave
Bethesda, MD 20014
301-657-8220
Contact: Robert E Cook
■ Products & Services
Data communications consultants
Timesharing/service bureaus

Branch Sales Offices:

CA Woodland Hills
STSC Inc
21243 Ventura Blvd
213-340-4611

CA San Francisco
STSC Inc
1 Market Plaza Bldg
415-777-4357

CO Englewood
STSC Inc
7965 E Prentice Ave
303-779-8878

CO Englewood
Resource Systems Inc
7965 E Prentice Ave
303-779-6909

CT Hartford
STSC Inc
111 Pearl St
203-549-0107

HI Kailua
STSC Inc
1269 Maleko St
808-261-3751

IL Oak Brook
STSC Inc
1550 Spring Rd
312-530-7600

MD Bethesda
STSC Inc
7316 Wisconsin Ave
301-657-8220

MD Bethesda
MTSC Inc
4330 E West Hwy
301-657-8220

MA Boston
STSC Inc
462 Boylston St
617-267-6864

MI Detroit
STSC Inc
100 Renaissance Ctr
313-259-0220

NY New York
APL*Plus Int'l
747 Third Ave
212-751-9305

NY Rochester
STSC Inc
3000 Winton Rd S
716-442-5281

NY Elmsford
STSC Inc
11 Clearbrook Rd
914-347-5560

NC Chapel Hill
STSC Inc
400 Eastowne Dr
Philadelphina

PA Philadelphia
STSC Inc
3 Penn Center Plaza
215-564-3980

TX Dallas
STSC Inc
1525 Elm St
214-263-4577

TX Houston
STSC Inc
11 Greenway Plaza
713-850-9400

ENGLAND London
APL*Plus Ltd
50-52 Chancery Ln
01-242-8135

FRANCE Paris
Societe de Traitements et de
Services Conversationnels
Tour Neptune; Cedex #20
773-7964

GERMANY, WEST
Dusseldorf
APL*Plus Int'l
Cecilienallee 68
0211-45-06-01

SPAIN Madrid
APL*Plus Int'l SA
Rosario Pino 6
279-47-84

SUN INFORMATION SERVICES CO

656 E Swedesford Rd
Wayne, PA 19087
215-293-0660

Contact: Michael R Reagos

Products & Services

Selection & transfer equipment, monitor &
test switching equipment

Data communications consultants

Data communications software, distributed
data processing system vendors

Data communications software, independent
software houses

Timesharing/service bureaus

Branch Sales Offices:

CA Irvine
Sun Information Services
2101 Business Center Dr
714-851-1999

CT Westport
Sun Information Services
500 Post Rd E
203-226-3517

DC Washington
Sun Information Services
2000 K St Northwest
202-466-4022

GA Atlanta
Sun Information Services
160 Elysian Way NW
404-351-6024

IL Chicago
Sun Information Services
625 N Michigan Ave
312-951-8340

MA Boston
Sun Information Services
100 Summer St
617-542-1207

NJ Princeton
Sun Information Services
29 Emmons Dr
609-452-8110

NY New York
Sun Information Services
122 E 42 St
212-490-2811

NY New York
Sun Information Services
488 Madison Ave
212-735-3875

OK Tulsa
Sun Information Services
907 South Detroit
918-586-6000

PA Wayne
Sun Information Services
680 E Swedesford Rd
215-293-0660

PA Philadelphia
Sun Information Services
1500 Center Sq
215-972-4800

TX Dallas
Sun Information Services
8350 N Central Exprwy
214-739-9800

TX Houston
Sun Information Services
4615 Post Oak Pl
713-961-2701

If you know the name of the
product and want to know who
makes it, turn to **Products &
Services Directory, page 5.**

SUPPORT SYSTEMS INTERNATIONAL

150 S 2nd St
Richmond, CA 94804
415-234-9090

Contact: Richard St John

Products & Services

Cables, electrical prefabricated extending

Computer/communications interfaces

Data access arrangement devices

Data jacks and plugs

Paper for terminals

Switches, data communications, manual

Branch Sales Offices:

CA Richmond
Support Systems International
150 S Second St
415-234-9090

SYNTEST CORPORATION

344 Boston Post Rd
Marlboro, MA 01752
617-481-7827

Contact: Curtis P Hoffman

Products & Services

Remote job entry terminals

Teleprinters, impact

Data communications software,
communications processors vendors

Branch Sales Offices:

CA Encino
King Eng Inc
17333 Rancho St
213-981-8677

FL Satellite Beach
Reynolds and Assoc Inc
476 N AIA
305-773-4700

IN Columbus
Miltronics
3809 Colonial Dr
812-376-6321

MD Silver Spring
Source Assoc
10300 Naglee Rd
301-431-0587

MA Waltham
Damer Hayes
296 Newton St
617-894-7290

MA Waltham
Digital Sales Assoc
9 Spring St
617-481-7827

PA Newtown Square
SWR Assoc
7 Reese Av
215-356-8550

VA Fairfax
Schibley Assoc
10604 Warwick Av
703-591-3008

WA Seattle
Datacom Assoc
1612 Eighth Ave W
206-285-2525

BELGIUM
1060 Brussels
N V Fimeca SA
Avenue Albert 125-B

ENGLAND
Richmond, Surrey
Russett Instruments Ltd
RIL House Sheen Park

ENGLAND
Herts
Lyons Instruments
Hoddesdon

FRANCE
Paris
ETS Kovacs
177 Rue de la Convention

GERMANY, WEST
Muenchen
Messgeraete Vertrieb
St Martin Strasse 30;
Kleinberghofen bei

GERMANY, WEST
D-8014 Neubiberg
Seltronics GMBH
Hermanstr 4 Bx 1236

SWEDEN
Vaellingby
M Stenhardt AB
Haesselby Torgio S-162-03

SWITZERLAND
Zurich
Tectron AG
Fufourstrasse 165 CH-8008

SWITZERLAND
Zuerich
Alpha Beta Electronics AG
Zuerich Renggerstrasse 3
Postfach 88 CH-8060

SYSTAR CORPORATION
1762 Technology Drive
San Jose, CA 95110
408-280-7066
Contact: Margaret J Retz
■ Products & Services
Concentrators
Front-end processors
Message switchers
Packet processors
Remote network processors
Cables, electrical prefabricated extending
Protocol converters
Satellite delay compensation units
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses

SYSTEM INDUSTRIES
525 Oakmead Pkwy
Sunnyvale, CA 94086
408-732-1650
Contact: Christopher J Ibbott
■ Products & Services
Disc drives, floppy
Disc drives, large
Disc packs
Tape drives, magnetic
Educational services
Maintenance organizations
Used equipment

Branch Sales Offices:

CA Los Angeles
Systems Industries
2049 Century Park E
213-557-0384

CA Santa Ana
Systems Industries
3621 MacArthur Blvd
714-754-6555

GA Atlanta
Systems Industries
3355 Lenox Rd NE
404-231-3640

IL Chicago
Systems Industries
625 N Michigan Ave
312-642-5456

MD McLean
Systems Industries
7927 Jones Branch Dr
703-734-9700

MA Newton Upper Falls
Systems Industries
385 Elliott St
617-332-3220

NJ Wayne
Systems Industries
Box 1152
201-839-8650

NY Great Neck
Systems Industries
50 Knightsbridge Rd
516-482-6082

NY New York
Systems Industries
200 Park Ave
212-953-0315

OH Cincinnati
Systems Industries
30 Triangle Park Dr
513-771-0075

RI Warwick
Systems Industries
57 Kilvert St
401-739-8070

TX Houston
Systems Industries
11777 Katy Fwy
713-497-7224

SYSTEMS ARCHITECTS INC

Thomas Patton Dr
Randolph, MA 02368
617-961-4840
Contact: Michael D Sadofsky
■ Products & Services
Data communications consultants
Data communications software, independent
software houses
Network simulation services
Timesharing/service bureaus

SYSTEMS ENGINEERING
LABORATORIES INC

6901 West Sunrise Blvd
Fort Lauderdale, FL 33313
305-587-2900

Contact: C S Shoemaker
■ Products & Services
Minicomputers
Database processors
Branch Sales Offices:

AL Huntsville
Systems Engrg Labs Inc
500 Wynn Dr
205-837-8250

AZ Tempe
Systems Engrg Labs Inc
610 W Broadway Rd
602-839-8999

CA El Segundo
Systems Engrg Labs Inc
101 Continental Blvd
714-547-3917

CA San Diego
Systems Engrg Labs Inc
5797 Chesapeake Court
714-292-8971

CA Santa Clara
Systems Engrg Labs Inc
3255-7A Scott Blvd
408-727-7120

CO Lakewood
Systems Engrg Labs Inc
445 Union Blvd
303-988-8150

FL Orlando
Systems Engrg Labs Inc
3165 McCary Pl
305-898-2741

GA Atlanta
Systems Engrg Labs Inc
2300 Peachford Rd
404-452-1400

IL Rolling Meadows
Systems Engrg Labs Inc
2775 Algonquin Rd
312-259-6060

MD Riverdale
Systems Engrg Labs Inc
6811 Kenilworth Ave
301-779-5050

MA Waltham
Systems Engrg Labs Inc
504 Totten Pond Rd
617-890-1030

MI Southfield
Systems Engrg Labs Inc
21411 Civic Center Dr
313-352-1200

MO Bridgeton
Systems Engrg Labs Inc
3460 Hollenberg
314-291-6989

NJ Hasbrouk Hts
Systems Engrg Labs Inc
377 Route 17
201-288-5750

NY Binghamton
Systems Engrg Labs Inc
33 W State St
607-724-7635

OH Dayton
Systems Engrg Labs Inc
1406-B Miamisburg Centerville Rd
513-434-7984

OK Tulsa
Systems Engrg Labs Inc
9717 E 42nd St
918-663-5674

PA Ft Washington
Systems Engrg Labs Inc
455 Pennsylvania Ave
215-542-1510

TX Dallas
Systems Engrg Labs Inc
13531 N Central Expwy
214-238-9548

TX Houston
Systems Engrg Labs Inc
2600 South Loop W
713-661-5350

WA Redmond
Systems Engrg Labs Inc
16725 NE 77th
206-527-1518

ALBERTA, CANADA

Calgary
Selcan Ltd
205-5th Ave SW
403-266-2804

QUEBEC, CANADA

St Laurent
Selcan Ltd
100 Alexis Nihon Blvd
514-744-2854

AUSTRALIA

Melbourne
Systems Pacific Pty Ltd
434 St Kilda Rd
61-3-267-5600

BELGIUM

Nivelles
Systems Engrg Labs SA
50 Blvd de la Dodaine; Bte. 73
32-67-227926

ENGLAND

Sutton Surrey
SEL Computers Ltd
2/4 Sutton Court Rd
441-642-9443

FRANCE

Bailly
Systems Engrg Labs SA
29 de Noisy
33-3-460-9675

GERMANY, WEST

Duesseldorf
Systems Engrg Labs GmbH
Bonnerstrasse 7-11
49-211-790196

GERMANY, WEST

Munich
Systems Engrg Labs GmbH
Landsberger Strasse 441/IV OG
49-89-885181

ITALY

Milano
SEL Computers SPA
Centro Direzionale Milano 2
39-2-215-3861

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breaks?
Turn to **UpDate Service Card, page
201.**

SYSTEMS FURNITURE CO

2727 Maricopa St
Torrance, CA 90503
533-1212
Contact: Donald A Lumpkin
■ Products & Services
Furniture, cabinets, terminal enclosures

SYSTEMS RESEARCH INC

2400 Science Parkway
Okemos, MI 48864
517-349-0200
Contact: Lawrence Meyers
■ Products & Services
Front-end processors
Minicomputers
DDP systems
Local network systems
Data entry terminals
Programmable terminals
Video data terminals (KSR)
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, independent
software houses
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

MI Okemos
Systems Research Inc
2400 Science Pkwy
517-349-0200

TAB PRODUCTS CO

1451 California Ave
Palo Alto, CA 94304
415-493-5790
Contact: Gary Evans
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Discs, floppy

Batch terminals
Data entry terminals
Programmable terminals
Interactive terminals
Remote job entry terminals
Furniture, cabinets, terminal enclosures
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

AZ Tempe
TAB Products Co
825 S Hohokam Dr
602-967-3371
CA El Monte
TAB Products Co
9440 Telstar Ave
213-575-3404
CA Palo Alto
TAB Products Co
1451 California Ave
415-858-2500
CA Sacramento
TAB Products Co
2110 K St
916-441-2897
CA San Diego
TAB Products Co
7585 Convoy Ct
714-292-5127
CA San Mateo
TAB Products Co
800 S Claremont
415-348-7262
CO Englewood
Unique Systems
2896 S Broadway
303-761-8125
FL Miami
TAB Products Co
4800 NW 167 St
305-624-1377
HI Honolulu
TAB of Hawaii
Box 10309
808-536-6727
IL Elmhurst
TAB Products Co
970 N Oaklawn Ave
312-279-0222
MD Rockville
TAB Products Co
6110 Executive Blvd
301-881-8090
MA Wellesley
Marketechs Inc
148 Linden St
617-237-4343
MI Dearborn Heights
TAB Products Co
20422 Van Born
313-278-5640
MO Raytown
Long's Data Service
9503 E 63 St
816-358-9003
NJ Pennsauken
TAB Products Co
220 Cooper Ctr
609-663-6120
NJ West Caldwell
TAB Products Co
1140 Bloomfield Ave
201-575-7690
NY Albany
TAB Products Co
855 Central Ave
518-482-8816

NY New York

TAB Products Co
360 Lexington Ave
212-972-1420

NC

Charlotte
Tab Products Co
5701 Executive Ctr Dr
704-536-8840

NC

Greensboro
Tab Products Co
412 W Market St
919-370-1887

OH

Dayton
TAB Products Co
6238 Executive Blvd
800-543-7872

OH

Milford
CDPS Inc
100 Techna Center Rd
513-561-8188

OR

Portland
TAB Products Co
1525 SE Tenth Ave
503-233-4986

TX

Irving
Noakes Data Comm
3330 Stovall
214-255-0441

TX

Irving
Tab Products Co
1000 Beltline Rd
214-256-5541

UT

Salt Lake City
TAB Products Co
2361 S Main
810-487-3872

WA

Bellevue
TAB Products Co
11101 NE 11
206-453-8917

TALOS SYSTEMS INC

7419 E Helm Dr
Scottsdale, AZ 85260
602-948-6540
Contact: Tim Stone
■ Products & Services
Telescriber

Branch Sales Offices:

AZ Scottsdale
Talos Systems Inc
7419 E Helm Dr
602-948-6540

TAU-TRON INC

27 Industrial Ave
Chelmsford, MA 01824
617-256-9013
Contact: Herb Clark
■ Products & Services
Error rate detectors

Branch Sales Offices:

AZ Scottsdale
Grady Moore Assoc
8621 E Columbus
602-994-9519
AZ Scottsdale
Dave Menegay Associates
Box 966
602-994-9519
CA S Pasadena
Beckrep Inc
1110 Fair Oaks Ave
213-799-4634
CO Boulder
Grady Moore Assoc
Box 4619
303-494-3351

FL Largo
Synergetic Representatives
13498 Ulmerton Rd
813-596-5331

GA Atlanta
Magaro & Assoc
Box 76652
404-252-6609

MA Keading
Scheinfein Associates
174 Haven St
617-944-2304

NJ Haworth
Central Assoc
Box 10
201-568-0808

NM Albuquerque
Grady Moore Assoc
5901 Gibson Blvd SE
505-262-1416

NY Old Bethpage
Central Assoc
11 Neil Dr
516-694-3205

PA Melrose Park
Robert Meyers Assoc Inc
613 W Cheltenham Ave
215-224-1663

UT Salt Lake City
Grady Moore Assoc
1153 Harrison
810-484-3365

VA Springfield
Sales Technology Inc
Box 575
703-971-6681

ONTARIO, CANADA
Ottawa
Comtest Communications Products
Ltd
374 Britannia Rd
613-828-5236

T-BAR INC
141 Danbury Rd
Wilton, CT 06897
203-762-8351
Contact: Trudy Bailey
■ Products & Services
Data content monitors
Network management centers
Technical control centers
Data jacks and plugs
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic
Switches, data communications, manual

Branch Sales Offices:

CA Walnut Creek
T-Bar Inc
1990 N California Blvd
415-943-1633

CA Arcadia
T-Bar Inc
735 W Duarte Rd
213-574-7930

CO Littleton
Cropley Inc
2275 E Arapahoe Rd
303-794-4231

GA Atlanta
T-Bar Inc
2814 New Spring Rd
404-432-8001

IL Hillside
T-Bar Inc
4415 W Harrison St
312-449-6006

MD Rockville
T-Bar Inc
414 N Hungerford Dr
301-279-0204

MA Randolph
T-Bar Inc
Box 641
617-961-4600

MI Lathrup Village
T-Bar Inc
28551 Southfield Rd
313-557-8330

MN Minneapolis
Delta Comm Systems
8120 Penn Av S
612-884-0202

NJ Bellmawr
Applied Delta Systems
101 Kor Center E
609-931-3100

NJ Jackson
T-Bar Inc
Box 613
201-363-3300

OH Cincinnati
T-Bar Inc
1147 Wendover Ct
513-251-2800

PA Pittsburgh
Applied Delta Systems
16 East West Dr
412-931-1960

TX Dallas
Computer Assoc
8383 Stemmons Expwy
214-634-1320

TX Arlington
T-Bar Inc
1201 N Watson Rd
817-640-8299

WA Bellevue
SJI Corp
1611-116th St NE

WV Huntington
T-Bar Inc
930 6th Ave
304-529-4141

WI Brookfield
Delta Comm Systems
14640 W Greenfield Av
414-784-3663

ONTARIO, CANADA
Scarborough
R-O-R Assoc Ltd
21 Rolark Dr
416-291-7121

AUSTRALIA
N Ryde
Racal Elec Pty Ltd
47 Talavera Rd

ENGLAND
Reading, Berks
Racal Milgo Ltd
Bennett Rd

HONG KONG
Hong Kong
Cable & Wireless Sys Ltd
Connaught Rd Central, Box 4477

INDIA
New Delhi
Harvik Elect Corp
9A Connaught Pl

ISRAEL
Tel Aviv
KBL Elect
17 Ben Shaprut St

JAPAN

Tokyo
Rikei Corp
1-26-2 Nishi-Shinjuku

NETHERLANDS

Slough, Berks
T-Bar Inter Europe
95 High St

PHILIPPINES

Makati
Philippine Consultancy Sys
115 Esteban Street

REPUBLIC OF CHINA

Taipei, Taiwan
How Teh Enterprise Ltd
65 Shung Chiang Rd

SINGAPORE

Singapore
Data Dynamics
566-B Block 1; Rochor Cntr

SOUTH AFRICA

Randenburg Transvaal
Grinaker Elec Ltd
Box 50994 2125

VENEZUELA

Caracas
NCR Summa Sistemas
Apartado 1907

TECHNOLOGY TRANSFER INC

PO Box 49765
Los Angeles, CA 90049
213-394-8305
Contact: Hal Levin
■ Products & Services
Data communications consultants
Educational services

TECHTRAN INDUSTRIES

200 Commerce Dr
Rochester, NY 14623
716-334-9640
Contact: Roland Boisvert
■ Products & Services
Cassette drives
Disc drives, floppy
Floppy disc recorders
Batch terminals
Programmable terminals
Portable data entry terminals
Remote job entry terminals

Branch Sales Offices:

CA Los Angeles
Techtran Industries
5456 McConnell Ave
213-391-0507

CA Torrance
Allen Edwards
2808 Oregon Ct
213-328-9770

CA Sunnyvale
Interlink
580 Weddell Dr
408-744-1930

FL Orlando
Gentry Assoc
550 N Bumby Ave
305-894-4401

IL Lansing
Bexdata
2533 Bernice Rd
312-239-3282

MA Chelmsford
Tekdata
6 Kidder Rd
203-693-0719

MN Minneapolis
Bexdata
7701 Normandale Blvd
612-835-5220

MO Grandview
Digital Systems Sales
4006 E 137 Tr
816-765-3337

NJ Ridgewood
Instrumentation Sls
Box 403
201-445-5210

NM Albuquerque
Rustco Enterprises
127 Gen Somerville NE
505-292-2741

NY Pittsford
J Cameron Assoc
1 Grove St
716-385-1681

OH Centerville
Micro Sls Corp
34 Virginia Av
513-433-8171

VA Annandale
Lankenau Assoc
3705 Forest Grove Dr
703-256-0800

TEC INC

2727 N Fairview Av
Tucson, AZ 85705
602-792-2230
Advertising page 126
Contact: Wim Selders
■ Products & Services
Badge readers
Data entry terminals
Graphic display terminals
Interactive terminals
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

CA Campbell
TEC Inc
274 E Hamilton
408-374-2660

CA Huntington Beach
TEC Inc
17610 Beach Blvd
714-848-3111

FL W Palm Beach
TEC Inc
2001 Palm Beach Lakes Blvd
305-684-1604

IL Oak Brook
TEC Inc
2625 Butterfield Rd
312-655-1060

MA Framingham
TEC Inc
One Framingham Centre
617-879-6886

MN Edina
Grayden & Flemmer Inc
7009 Washington Ave
612-941-1120

TX Lewisville
TEC Inc
192 Sivic Cir
214-436-3416

BELGIUM
Brussels
TEC International Inc
148 Avenue Louise
02-6498154

TEK-COM

2142 Paragon Dr
San Jose, CA 95131
408-263-7400
Contact: Ted Tallman

■ Products & Services

Acoustic couplers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Automatic answering units
Automatic calling units
Cables, electrical prefabricated/extending
Computer/communications interfaces
Data access arrangement devices
Switches, data communications, manual

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

TEKELEC-AIRTRONICS A

6, Rue Louis Pasteur
Boulange, 92100
33-1-604-8142
Contact: Philip Black
■ Products & Services
Electrical-parameters test equipment
Protocol analyzers
Power supplies
Protocol converters
Pulse and signal regenerators
Data communications consultants

Branch Sales Offices:

CA Canoga Pk
Tekelec Inc
21201 Victory Blvd
213-992-8001

TEKTRONIX INC

Box 1700, MS 53-077
Beaverton, OR 97075
503-644-0161
Contact: Jim Griffin
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Data content monitors
EIA cable testers
Electrical-parameters test equipment
Error rate detectors
Protocol analyzers
Response-time monitors
RTS emulator
Cartridges
Cartridge drives
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Tape, magnetic
Tape drives, magnetic
Tape, paper
Batch terminals
Digital plotters
Graphic display terminals
Programmable terminals
Interactive terminals
Remote line printers
Terminal controllers
Video data terminals (KSR)
Power supplies
Maintenance organizations

Branch Sales Offices:

AL Huntsville
Tektronix Inc
3322 S Memorial Pkwy
205-881-2912

AZ Phoenix
Tektronix Inc
4130 E Wood St
602-268-8861

CA Pleasant Hill
Tektronix Inc
3451 Vincent Rd
415-932-4949

CA Irvine
Tektronix Inc
17052 Jamboree Blvd
714-556-8080

CA Woodland Hills
Tektronix Inc
21300 Erwin St
213-999-1711

CA San Diego
Tektronix Inc
7827 Convey Ct
714-292-7330

CA Santa Clara
Tektronix Inc
3003 Bunker Hill Ln
408-496-0800

CO Englewood
Tektronix Inc
14 Inverness Dr E
303-773-1011

CT Milford
Tektronix Inc
40 Commerce Park Rd
203-877-1494

FL Fort Lauderdale
Tektronix Inc
2745 NW 62nd St
305-973-9300

FL Orlando
Tektronix Inc
3657 Maguire Blvd
305-894-3911

FL Pensacola
Tektronix Inc
6425 N Pensacola Blvd
904-476-1897

GA Norcross
Tektronix Inc
3320 Holcomb Bridge Rd
404-449-4770

HI Honolulu
Tektronix Inc
2979 Ualena St
808-836-1138

IL Rolling Meadows
Tektronix Inc
5350 Keystone Ct
312-259-7580

IN Indianapolis
Tektronix Inc
6121 E 30 St
317-545-2351

KS Overland Park
Tektronix Inc
10580 Barkley
913-341-3344

LA Kenner
Tektronix Inc
1940 I-10 Service Rd Concorse
Place
504-466-4445

MD Lutherville
Tektronix Inc
1526 York Rd
301-321-7000

MD Rockville
Tektronix Inc
2 Research Ct
301-948-7151

MA Lexington
Tektronix Inc
482 Bedford St
617-861-6800

MI	Farmington Tektronix Inc 24155 Drake Rd 313-478-5200	TX	San Antonio Tektronix Inc 3311 Roselawn 512-434-4334	AUSTRALIA	Sydney Tektronix Australia Pty Ltd 80 Waterloo Rd; North Ryde NS W 2113 888-7066
MN	St Paul Tektronix Inc 4660 Churchill Rd 612-484-8571	UT	Salt Lake City Tektronix Inc 300 Mercer Way 801-486-1091	AUSTRIA	Vienna Rohde & Schwarz-Tektronix Ges mbH Sonnleithnergasse 20 62 61 41
MO	Hazelwood Tektronix Inc 422 Anglum Rd 314-731-4696	VA	Newport News Tektronix Inc 606 Denbigh Blvd 804-874-0099	AUSTRIA	Vienna Rohde & Schwarz Tektronix Ges mbH Sonnleithnergasse 20 A-1100 62 61 41
NJ	Woodbridge Tektronix Inc 40 Gill Ln 201-636-8616	WA	Kent Tektronix Inc 19026 72 Ave S 206-575-0180	BELGIUM	1130 Bruxelles Tektronix vn/sa Rue De La Fusee NR 100 02/720.80.20
NM	Albuquerque Tektronix Inc 1258 Ortiz Dr SE 505-265-5541	ALBERTA, CANADA	Calgary Tektronix Canada Inc 3011 19th St NE 403-230-1836	BOLIVIA	La Paz Coasin Bolivia SRI Avenida 6 de Agosto 2300 40962
NY	Albany Tektronix Inc 16 Computer Dr W 518-458-7291	ALBERTA, CANADA	Edmonton Tektronix Canada Inc 6025-103A St 403-434-9466	BRAZIL	LEP 01454 Sao Paulo Tektronix Industria e Comercio Ltda Rua Franz Schubert 59 813-3011
NY	Woodbury Tektronix Inc 100 Crossways Park W 516-364-9060	BRITISH COLUMBIA, CANADA	Burnaby Tektronix Canada Inc 4519 Canada Way 604-438-4321	CHILE	Santiago Equipos Industriales SACI Moneda 812 716-882
NY	Poughkeepsie Tektronix Inc 38 Haight Ave 914-454-7540	MANITOBA, CANADA	Winnipeg Tektronix Canada Inc 1313 Border St 204-632-4447	COLOMBIA	Bogota Selectronica Ltda Apartado Aereo 25124 632874
NY	Rochester Tektronix Inc 1210 Jefferson Rd 716-244-2600	ONTARIO, CANADA	Barrie Tektronix Canada Inc Box 6500 705-737-2700	COSTA RICA	San Jose Electo-Impex SA Apartado 620 21-59-54
NY	North Syracuse Tektronix Inc 1 Northern Concourse 315-455-6661	ONTARIO, CANADA	Ottawa Tektronix Canada Inc 1792 Courtwood Crescent 613-225-2850	DENMARK	Herlev Tektronix A/S Herlev Hovedgade 119 02 84 56 22
NC	Raleigh Tektronix Inc 3725 National Dr 919-782-5624	QUEBEC, CANADA	Pointe Claire Tektronix Canada Inc 900 Selkirk St 514-697-5340	ECUADOR	Quito Proteco Coasin Cia Ltda Ave 6 de Diciembre 865 y Roca 52-6759
OH	Middleburg Hts Tektronix Inc 7830 Freeway Circle 216-243-8500	NOVA SCOTIA, CANADA	Dartmouth Tektronix Canada Inc 10 Akerley Blvd 902-469-9476	EGYPT (UAR)	Cairo Giza Systems Engineering Co 4 El-Hesn St 841200
OH	Dayton Tektronix Inc 501 Progress Rd 513-859-3681	ALGERIA	Guernsey Tektronix Ltd Box 36 61.50.24	EL SALVADOR	San Salvador Electronica Cuscatleca SA de CV 21 Av Nte y Calle Arce 1268 22-0297
OK	Oklahoma City Tektronix Inc 800 NE 63 405-848-3361	ALGERIA	Guernsey Channel Islands Tektronix Limited Box 36 Guernsey 35781	ENGLAND	Harpden Hints Tektronix UK Ltd 36-38 Coldharbour Ln 63141
OR	Tigard Tektronix Inc 7000 SW Hampton St 503-620-9100	ANGOLA	Luanda Tecnidata Representacoes Tecnicas e Electronica Aplicada Lda Caixa Postal 1619 32025	FINLAND	Helsinki 65 Tektronix O/Y Larin Kyostin tie 4 90-722 400
PA	Blue Bell Tektronix Inc 1720 Walton Rd 215-825-6400	ARGENTINA	Buenos Aires Coasin SA Virrey del Pino 4071 52-3185		
PA	Pittsburgh Tektronix Inc 1051 Brinton Rd 412-244-9800				
TN	Knoxville Tektronix Inc 9041 Executive Park Dr 615-690-6422				
TX	Dallas Tektronix Inc Box 344529 214-233-7791				
TX	Houston Tektronix Inc 10887 S Wilcrest Dr 713-933-3000				

FRANCE

91401 Orsay
Tektronix
Z I Courtaubouf B P 13
907 78 27

GERMANY, WEST

1000 Berlin-West 10
Rohde & Schwarz Handels Ges mbH
Ernst-Reuter-Platz 10
030 3 41 40 36

GREECE

Athens
Marios Dalleggio Representations
2 Alopekis St
710.669

HONG KONG

Causeway Bay
Gilman & Co Ltd
280 Gloucester Rd
5-794266

ICELAND

Reykjavik
Kristjan O Skagfjord Ltd
Box 906
24120

INDIA

Bombay
Hinditron Services Private Ltd
69-A L lagmohandas Marg
81 13 16/81 53 44

INDONESIA

Jakarta
P T Dwi Tunggal Jaya Sakti
Box 4435
367390-9

IRAN

Tehran
Irantronics Company Ltd
20 Salm Rd
828294

IRAQ

Baghdad
Al Manar Engineering WLL
Jumhuriya St
60992

ISRAEL

Tel Aviv
Eastronics Ltd
11 Rozanis St
475151

ITALY

20141 Milano
Tektronix SPA
Via Lampedusa 13
8466440

IVORY COAST

Abidjan
SITEL
Blvd Giscard D'Estaing-Carrefour
353600

JAPAN

Tokyo
Sony/Tektronix Corp
9-31 Kitashinagawa-5
448-4851

JORDAN

Amman
TAREQ Scientific Bureau
Box 35055
42333

KENYA

Nairobi
Engineering & Sales Co Ltd
Box 46658
26815

KOREA REP (REP)

Seoul
M-C International Ltd
22-2 Hakdong Kangnam-Ku
56 6131

KUWAIT

TAREQ Co
Box Safat 20506
436100

LEBANON

Beirut
Projects SAL
Box 11-5281
331680

MALAYSIA FED OF

Petaling Jaya Selangor
Mecomb Malaysia Sdn Bhd
#2 Lorong 13/6A
773455

MEXICO

Mexico
Tektronix SA de CV
Colonia Napoles
905-687-1021

MOROCCO

Rabat Agdal
SCRM
75 Ave Fal Ould Oumeir
07-749-47

NETHERLANDS

Badhoevedorp
Tektronix Holland NV
Meidoornweg 2
02968-1456

NEW ZEALAND

Auckland
W & K McLean Ltd
103-105 Felton Mathew Ave
587-037

NORWAY

Oslo
Tektronix Norge A/S
Lorenfaret 1
02-212855

PAKISTAN

Karachi-29
Pak-Land Corp
Iqbal Rd
437315

PANAMA

Panama 5
Executive Marketing Corp
Apartado 4929
64-9354

PERU

Lima
Importaciones y Representaciones
Electronicas SA
Avda FD Roosevelt 105
28-86-50

PHILIPPINES

Makati Rizal 3117
Philippine Electronic Industries
Inc
8755 Paseo de Roxas
87-99-26

PORTUGAL

Lisbon
Decada Equipamentos de
Electronica Lda
Box 1128
574984

SAUDI ARABIA

Riyadh
Electronic Equipment Mktg Ltd
Box 3750
32700/37023

SINGAPORE

Singapore 3
Mechanical & Combustion Eng Co
Ptd Ltd
10-12 Jalan Kilang
647151

SOUTH AFRICA

Transvaal
Protea Physical & Nuclear
Instrumentation (Pty Ltd)
746 Sixth St
27 11 786-3647

SPAIN

Madrid 27
Tektronix Espanola SA
c/Condesa de Venadito
91 4041011

SUDAN

Khartoum
Cine & Photo Supply Co
Box 393
75162

SURINAM

Paramaribo
Wong Sang Tsoi & Co
20-24 Dominestraat
73511

SWEDEN

S-171 04 Solna
Tektronix AB
Fack
08/83 00 80

SWITZERLAND

CH-6301 Zug
Tektronix International AG
Box 57
042 21 91.92

SYRIA

Damascus
General Trading Co
Box 798
114807

TAIWAN

Taipei 104 ROC
Heighten Trading Co Ltd
16 Nanking E Rd
551-916

THAILAND

Bangkok
G Simon Radio Co Ltd
30 Patpong Ave
30991-3

TUNISIA

Tunisie
Societe El Eslek
3 Rue de la Monnaie
244372

TURKEY

Istanbul
Erkman Elektronik Aletler
Necatibey Caddesi 92/3
44 15 46/44 76 51

URUGUAY

Montevideo
Coasin Uruguay SRL
Casilla de Correo #1400
91-79-78

VENEZUELA

Caracas
Equilab CA
Avda Romulo Gallegos
283-1166

ZAMBIA

Lusaka
Baird and Tatlock Ltd
Chandwe Musonda Rd
75315/6

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

TELAUTOGRAPH CORPORATION

8700 Bellanca Ave
Los Angeles, CA 90045
213-641-3690

Contact: Frank May
■ Products & Services
Facsimile terminals
Telescriber

Paper for terminals

Branch Sales Offices:

- CA Los Angeles
Telaugraph Corp
8700 Bellanca Ave
213-776-0765
- CA San Francisco
Telaugraph Corp
1485 Bayshore
415-467-3212
- CO Denver
Telaugraph Corp
1405 Florence St
303-364-4156
- DC Baileys Cross Roads
Telaugraph Corp
5850 Leesburg Pike
703-820-3573
- FL North Miami
Telaugraph Corp
1626 NE 148 St
305-940-0423
- GA Atlanta
Telaugraph Corp
6855 Jimmy Carter Blvd
404-447-8440
- HI Honolulu
Telaugraph Corp
1160 N King St
808-841-5031
- IL Chicago
Telaugraph Corp
1921 N Harlem
312-622-7111
- IN Indianapolis
Telaugraph Corp
6226 N Collage Ave
317-647-9005
- LA New Orleans
Telaugraph Corp
3003 Lime
504-282-4635
- MA Boston
Telaugraph Corp
950 Boylston Ave
617-244-4006
- MI Royal Oak
Telaugraph Corp
4610 Delemere
313-549-0600
- MI Detroit
Telaugraph Corp
4610 Delemere
313-549-0600
- MN St Paul
Telaugraph Corp
1821 University Ave
612-644-1198
- MO St Louis
Telaugraph Corp
8147 Delmar Blvd
314-385-1153
- NJ Clifton
Telaugraph Corp
57 Lakeview Av
201-772-2740
- OH Cincinnati
Telaugraph Corp
1433 E McMillan
513-861-2214

- OH Cleveland
Telaugraph Corp
19701 S Miles Ave
216-267-4557
- PA Pittsburgh
Telaugraph Corp
200 Dinsmore Ave
412-922-5118
- TN Nashville
Telaugraph Corp
107 Music City Circle
615-256-0734
- TX Houston
Telaugraph Corp
3511 Pinemont
713-688-9505
- TX Dallas
Telaugraph Corp
2339 Inwood Rd
214-357-0785

TELECOMMUNICATIONS
TECHNIQUES
CORP

7 Dalamar Street
Gaithersburg, MD 20760
301-258-5011
Contact: R Story
■ Products & Services
Digitized-voice processors
Line drivers
MIL 188C adapters
Data content monitors
Electrical-parameters test equipment
Error rate detectors
Technical control centers
Computer/communications interfaces
Data jacks and plugs
Pulse and signal regenerators
Satellite delay compensation units
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment
Switches, data communications, automatic
Switches, data communications, manual
Voice digitizers

Branch Sales Offices:

- CA Aptos
Lencom Assoc
1701 Cox Rd
408-684-0366
- CA Englewood
Barnhill Two & Three Inc
7076 S Alton Way
303-779-3600
- CT Fairfield
Higgins Ind Inc
33 Old Academy Rd
203-259-2113
- MD Silver Spring
Spectro Systems Corp
11141 Georgia Av
301-949-8261
- NH Concord
Concord Communications Inc
5 South State
603-224-8602
- TX Shinagawa-Ku Tokyo
Nihon Dynatech KK
25-5 Nishi-Gotanda 7-Chome
03 490-2871
- ONTARIO, CANADA
Downsview
Teleradio Systems Ltd
301 Supertest Rd
416-661-3221

TELECOMMUNICATIONS
TECHNOLOGY
INC

555 Del Rey Ave
Sunnyvale, CA 94086
408-735-8080
Contact: Glenn Patterson
■ Products & Services
Electrical-parameters test equipment
Network management centers
Remote job entry terminals

Branch Sales Offices:

- CA Sunnyvale
Telecommunications Tech
555 Del Rey Ave
408-735-8080
- CA Santa Fe Springs
Kennedy Eng Co
Box 2667
213-868-9965
- CO Denver
Lindberg Co
6140 E Evans Ave
303-758-9033
- DC Washington
Powell-Pendergraph
7979 Old Georgetown Rd
301-656-4535
- GA Marietta
Telecommunications Tech
2967 Christopher Ct
404-973-4794
- IL Schaumburg
Kenneth W Meyers Co
1242 Remington Rd
312-882-4808
- WA Bellevue
Arva Hudson
Box 1512
206-455-0773
- WI Onalaska
Telecommunications Tech
1404 Well St
608-785-1490
- ONTARIO, CANADA
Scarborough
ROR Assoc Ltd
21 Rolark Dr
416-291-7121
- ONTARIO, CANADA
Mississauga
Telecommunications Tech
1655 Sismet Rd
416-625-4406

TELEDYNE INET

2750 West Lomita Blvd
Torrance, CA 90509
213-325-5040
Contact: G Richert
■ Products & Services
Uninterruptible power supplies, line
correctors, etc

Branch Sales Offices:

- NY NYC
Teledyne Inet
420 Lexington Av
212-243-3194
- TX Richardson
Teledyne Inet
634 Tiffany Trail
214-690-5842
- VA Arlington
Teledyne Inet
1501 Wilson Blvd #900
703-522-2557
- BELGIUM
Brussels
Teledyne Inet
181 Chaussee de la Hulpe
02-673-9988

SAUDI ARABIA

Jeddah
Teledyne Inet
New Jeddah International Airport
69-2700 X4330

TELEMATION MANAGEMENT GROUP INC

50 Church St
Cambridge, MA 02138
617-492-7014
Contact: Nelson Hanover
■ Products & Services
Data communications consultants

TELEPROCESSING PRODUCTS INC

4565 E Industrial Way; Bldg #7-K
Simi Valley, CA 93063
805-522-8149
Contact: Richard Lach
■ Products & Services
Modem sharing units
Port selectors
Port sharing units
Line drivers
Modem eliminators
Parallel line extenders
Protocol analyzers
Response-time monitors
RTS emulator
Code converters
Protocol converters
Selection & transfer equipment,
reconfiguration equipment
Data communications consultants
Network simulation services
Teleprocessing monitors

Branch Sales Offices:

CA Lafayette
Persons & Assoc
3717 Mt Diablo Blvd
415-284-2912
CA Los Angeles
Hanex Inc
1203 Santa Monica Blvd
213-556-3807
CO Littleton
Croyley Inc
2275 E Arapahoe Rd
303-794-4231
CT Westport
T H Maguire & Assoc Inc
Box 666
203-226-4281
GA Marietta
Rothechild Communications
2962 Kodiak St
404-977-1600
IL Chicago
HH Sales
2007 N Sedgwick
312-871-8250
IN Indianapolis
HH Sales
3232 Blue Bell Ln
317-297-1876
MA Danvers
John Melason & Assoc
39 Pine St
617-774-1220
MI Farmington Hills
Data Specifications Corp
31700 W 12 Mi Rd
313-553-9111
MN Minneapolis
Delta Communications
8120 Penn Ave So
612-884-0202

NJ Bellmawr
Applied Delta Sys
101 Kor Center E
609-931-3100
NY Ilion
Annese & Assoc
60 Pine St
315-895-7469
NY Great Neck
Harvey Krasner Assoc
87 Water Mill Ln
516-487-0690
NY Rochester
Annese & Assoc Inc
100 Berwick Rd
716-654-9132
OH Columbus
Data Specifications Corp
6230 Busch Blvd
614-885-6682
OH Cleveland
Data Specifications Corp
19120 Detroit Rd
216-333-6740
PA Pittsburgh
Applied Delta Sys
16 EW Dr
412-931-1960
TX Dallas
Computer Assoc
209 Empire Cntr
214-634-1320
WA Seattle
SJI Corp
5950 6th Ave So Ste 101
206-624-9020
WI Brookfield
Delta Comms Inc
14640 W Greenfield Av
414-784-3663
ONTARIO, CANADA
Downsview
Electronetic Systems
62 Alness St
416-661-3673

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

TELERAY DIV
RESEARCH INC
PO Box 24064
Minneapolis, MN 55424
612-941-3300
Contact: Travis D Henry
■ Products & Services
Port sharing units
Disc drives, floppy
Programmable terminals
Interactive terminals
Video data terminals (KSR)
Video data terminals (RO)
Maintenance organizations
Branch Sales Offices:
AZ Tempe
J F Hurlbut Co
1000 E Apache Blvd
602-968-5962
CA Long Beach
Edwards Assoc
Box 4591
213-597-1231
CA Torrance
Edwards Assoc
2808 Oregon Ct
213-328-9770

CA Irvine
Edwards Assoc
Box 4306
714-552-7850
CA San Diego
Edwards Assoc
1735 Archer
714-273-4771
CA Sunnyvale
Inter-Link Systems
580 Weddell Dr
408-744-1930
CA Thousand Oaks
Edwards Assoc
887 Tupelo Wood Court
805-498-5413
CO Golden
J F Hurlbut Co
622 Gardenia Ct
303-279-7796
FL Ft Lauderdale
Equipment Resources
2715 E Oakland Park Blvd
305-563-0140
GA Atlanta
Equipment Resources
120 Interstate North
404-952-5757
HI Honolulu
Western Union of Hawaii
190 S King St
808-523-1326
IL Oak Brook
Systems Consulting
1200 Harger Rd
312-655-0040
IL Bensonville
RBZ Systems
1101 W Irving
312-860-2202
MD Silver Spring
Product Management
1110 Fidler La
301-589-2802
MA Lowell
S & S Electronics
80 Stedman St
617-459-2578
MI Southfield
Data Tron
17250 W 12 Mile Rd
313-354-6421
MI Farmington
Star-Tronic
23995 Freeway Park Dr
313-477-7586
MN Brooklyn Park
Tele-Terminals
7216 Boone Ave N
612-535-5330
NJ Ridgewood
Hansen & Hughes
Box 806
201-652-7055
NJ Ringwood
Data Network Associates
126 Kendall Dr
201-962-6010
NJ Union
Transnet
1945 Route 22
201-688-7800
NY Penfield
Western NY Computing
Box 56
716-381-4120
OH Wickliffe
Data Tron
29150 Anderson Rd
216-585-8421

TEL

OH Dayton
Data Tron
Box 24207
513-223-8421

PA Monroeville
Data Tron
Box 67
412-243-8421

PA Ambler
Denco Data Equipment
25 Skippack Pike
215-542-9876

TX Dallas
SCI Sales
16990 Dallas Pkwy
214-931-1487

TX Houston
SCI Sales
1199 Nasa Rd 1
713-488-3728

UT Salt Lake City
J F Hurlbut Co
3616 West 2100 South
801-793-4443

VA Richmond
Product Management
12124 Garden Gate Rd
804-774-4925

WA Federal Way
Applied Engineering
1626 S 341 Pl
214-931-1487

BRITISH COLUMBIA, CANADA
Vancouver
R O R Associates Ltd
2415 Columbia St
604-876-4311

ONTARIO, CANADA
Scarborough
R O R Associates Ltd
21 Rolark Dr
416-291-7121

ONTARIO, CANADA
Ottawa
R O R Associates Ltd
7 Slack Rd
613-225-7646

QUEBEC, CANADA
Montreal
R O R Associates Ltd
3300 Cavendish Blvd
514-482-8430

ARGENTINA
Buenos Aires
ARO-SAIC
Casilla de Correo 5681
39-8278-34-1586

AUSTRALIA
Mt Waverley Victoria
Anderson Digital Equipment Pty
Box 322
03-543-2076

BRAZIL
Sao Paulo
AROTEC
Av Pacaembu 811
262-3458

DENMARK
2840 Horte
Iversen & Martens
Hanne Nielson VEJ10
855-37716

ENGLAND
Tring Herts
Teleprinter Equipment Ltd
70-82 Akeman Street
851-82362

FRANCE
9220 Bagneville
Technitron SA
8 Av Aristide Briand
842-204792

GERMANY, WEST
8000 Munchen 90
Technitron GmbH
Martin Luther Str 20
841-522585

HONG KONG
Kowloon
Realtime Systems Ltd
132 Austin Rd
780-36751

INDIA
Pune
Electromark Associates
17A/3 Erandawana
145333

ISRAEL
Tel-Avia
STG International
10 Huberman St
53459

ITALY
20144 Milano
Technitron SRL
12 Via California
843-332252

NEW ZEALAND
Lower Hutt
Anderson Digital Equipment Pty
31 Kings Crescent PO Box 30511
NZ3859

REPUBLIC OF CHINA
Taipei
Suntown and Co
Box 22986
752-9006

SWEDEN
Solna
Ad-Teknik AB
Box 9100
08/83-69-20

SWITZERLAND
8600 Duebendorf
Rodata AG
Uster Str 120
845-59471

TAIWAN
Taipei
Suntown and Co
Box 22986
752-9006

VENEZUELA
Caracas
Digi-Data CA
Box 70657
387357

TELE-SIGNAL CORP
185 Oser Ave
Hauppauge, NY 11787
516-273-3939
Contact: Stephen Landry
■ Products & Services
Multiplexers, frequency division
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
MIL 188C adapters
Network management centers
Technical control centers
Code converters
Data security devices, encoder/decoders
Pulse and signal regenerators

Selection & transfer equipment, monitor & test switching equipment
Selection & transfer equipment, patching equipment

TELETYPE CORP
5555 Touhy Ave
Skokie, IL 60077
312-982-2000
Contact: M A Pedote
■ Products & Services
Cartridge drives
Tape punch/reader, paper
Batch terminals
Remote line printers
Teleprinters, impact
Teletypewriters
Video data terminals (KSR)
Maintenance organizations

TELEVIDEO INC
2149 Paragon Dr
San Jose, CA 95131
408-946-8500
Contact: Judy Nakamura
■ Products & Services
Video data terminals (KSR)
Branch Sales Offices:

AZ Tempe
MicroAge
1618 W 12th Pl
602-894-9247

CA Oakland
Consolidated Data Terminals
477 Roland Wy
415-638-1222

CA Fountain Valley
MQI Computer Products
18381 Bandler Cir
714-751-2005

CA Santa Clara
R C Data
346 Mathew St
408-988-7510

CA Los Angeles
The David Jamison Carlyle Corp
Two Century Plaza; 2049 Century
Park E
213-277-4562

CA San Diego
Data Systems Marketing
5710 Ruffin Rd
714-560-9222

CA Foster City
Leasametric
1164 Triton Dr
415-574-4441

CA Tustin
Terminal Rentals Inc
2722 Walnut Ave
714-754-1039

CA Santa Clara
United Components Inc
2520 Mission College Blvd
408-496-6900

CO Englewood
Thorson Rocky Mountain Inc
7076 S Alton Way
303-779-0666

FL Orlando
Gentry Assoc Inc
7527 Currency Dr

IL Rosemont
Information Systems Inc
9806 W Farragut Ave
312-671-7780

KS Shawnee-Mission
Inland Associates Inc
7975 West 63rd St
913-362-2366

MA Cambridge
Compumart Corp
270 Third St
617-491-2700

MA Chelmsford
Computer Peripherals of New
England
20 Brentwood Rd
617-272-7380

MA Harvard
Harvard Data
Warren Ave
617-456-8037

MA Wakefield
SelectTerm Inc
2 Audubon Rd
617-246-1300

NJ Warton
ADL Enterprises
Richard Mine Rd
201-328-1300

NJ Fort Lee
Technical Marketing Associates
2460 LeMoine Ave
201-224-6911

NY Rochester
R G Engineers
3100 Monroe Ave
716-385-3021

PA Huntingdon Valley
Marketline Systems Inc
2337 Philmont Ave
215-947-6670

TX Addison
Data Applications Corp
4901 Keller Springs Rd
214-931-1100

TX Dallas
US Data
14241 Proton Rd
214-661-3363

ONTARIO, CANADA
Toronto Ont
Datamex Ltd
14 Leswyn Rd
416-787-1208

AUSTRALIA
Mt Waverly Victoria
Anderson Digital Equipment
1 Expo Ct
03-543-2077

BELGIUM
Brussels
Teleprint Benelux BV
Wetstraat 34
02-5118150

ENGLAND
Belper Derby
Midlectron
Nottingham Rd
077382-5442

FRANCE
Asnieres Cedex
Metrologie
4 Ave Laurent Cely
1-791-4444

FRANCE
Villiers Sur Marne
Periferic
26-28 Rue Jean Jaures
304-9635

GERMANY, WEST
Eching
Kontron Elektronik GMBH
Breslauer Strasse 2
089-319011

GERMANY, WEST
Munich
Percom Computer Peripherie GMBH
Eisenaucher Str 10
89-366033

ITALY
Milan
Eurotech Italia SPA
Via S Sofia 18
805-58350

JAPAN
Tokyo
Matsushita Electric Co Ltd
2-Chome Hammamatsu-Chi
03-435-4501

NETHERLANDS
Hertogenbosch
Compudata Benelux BV
Rietveldeweg 49
073-2157000

SCOTLAND
Cwmbran Gwent Wales
Data Type Perminals
Springvale Ind Est
063-33-65307

SO. W. AFRICA (NAMIBIA)
Pretoria
Data Management
Beatrix St
2-3307-8-9

SPAIN
Barcelona
Interface SA
Ronda San Pedro 22 3
3-3017851

SWEDEN
Vasby
Data Com
194 04 Upplands
0760-858-73

Get new product information when it
breaks?
Turn to **UpDate Service Card, page
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TELEX COMPUTER PRODUCTS INC

6422 E 41st St
Tulsa, OK 74135
918-627-1111
Contact: Bert Hochfeld

■ Products & Services
Disc drives, large
Tape drives, magnetic
Data entry terminals
Interactive terminals
Remote line printers
Teleprinters
Terminal controllers
Video data terminals (KSR)

Branch Sales Offices:

CA Garden Grove
Telex Computer Products Inc
12717 Western Ave
714-898-9833

GA Atlanta
Telex Computer Products Inc
2101 Powers Ferry Rd
404-955-7745

IL Park Ridge
Telex Computer Products Inc
1460 Renaissance
312-298-9800

MI Southfield
Telex Computer Products Inc
21411 Civic Center Dr
313-358-1195

NJ Cherry Hill
Telex Computer Products Inc
Rt 70 & Cuthbert Blvd
609-655-8066

ONTARIO, CANADA
Willowsdale Ont
Telex Computer Products Inc
322 Consumers Rd
416-494-4444

TEL-TEX INC

2825 W 11
Houston, TX 77008
713-868-6000
Contact: Randy Parks
■ Products & Services
Modem sharing units
Acoustic couplers
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Cassettes
Discs, floppy
Tape, paper
Tape punch/reader, paper
Programmable terminals
Portable data entry terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal interfaces
Video data terminals (KSR)
Word processors, communicating
Furniture, cabinets, terminal enclosures
Paper for terminals
Ribbons and supplies for terminals and
printers
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

OK Oklahoma City
Tel Tex Inc
1117 S Cornell Pkwy
405-947-3797

OK Tulsa
Tel Tex Inc
5553 S Peoria
918-742-9673

TX Richardson
Tel Tex Inc
709 Lingco
214-231-8077

TX Austin
Tel Tex Inc
8900 Shoal Creek
512-451-8201

MEXICO

Mexico City
Datos en Lineas SA
Cantu 9-105 Colonia Anzures
905-531-0329

TELTONE CORP

10801 120th/NE
Kirkland, WA 98033
206-827-9626
Contact: Jack K Merrow
■ Products & Services
Specialized carriers
Multiplexers, statistical (intelligent)
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)

Modems, voice-grade, high-speed
(4,800-9,600 b/s)

Branch Sales Offices:

AL Birmingham
Merv E Amick
537 Pinellas Street

CA Santa Monica
Teltone Corp
PO Box 5301

CA Sunnyvale
W J Ramian
165 Connemara Way

CO Arvada
Walt McKeen
10003 W 68th Way

FL Orange Park
Jerry J Pagel
760 Ashwood St

FL Dunedin
Dale Westbay
Box P

GA Marietta
Teltone Corp
1860 Battlefield Rd

IL Bradford
Bill Newcum
Box 299

KS Overland Park
Quent Bourkland
Box 7354

MI Ann Arbor
Steve Nelson
206 Norfolk Ave

MN Brooklyn Center
Nick Nekvinda
5324 Northport Dr

NH Concord
Dea W Waters
RFD #2 Page Rd

NJ Morristown
Teltone Corp
35 Pine St

NY Oyster Bay
William Emig
Center Island

PA Harrisburg
Bryce Brown
4619 Danbury Rd

TX Houston
Dan Kuehn
9019 Eldora St

ONTARIO, CANADA
Markham
Jim Horsley
91 Telson Rd

SASKATCHEWAN, CANADA
Winnipeg
George Fenton
66 Carlotta Cr

TERMIFLEX CORP

17 Airport Rd
Nashua, NH 03063
603-889-3883
Contact: Jim Buzzell
■ Products & Services
Digital service units
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote job entry terminals
Data jacks and plugs
Data communications software, independent
software houses
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

AL Huntsville
Sesco Inc
3322 S Memorial Pkwy
205-881-8768

CA Inglewood
Basic Systems Corporation
230 West Florance Ave
213-673-4300

CA Santa Clara
Basic Systems Corporation
2359 De La Cruz
408-727-1800

CA San Diego
Basic Systems Corporation
7152 Convo Ct
714-268-8000

CT North Haven
Pat Jenks Associates
52 Washington Ave
203-239-6201

DC Washington
Powell-Pendergraph Inc
7979 Old Georgetown Rd
301-656-4535

FL Hallandale
Sesco Inc
409 W Hallandale
305-458-1506

GA Atlanta
Sesco Inc
2231 Perimeter Park
404-458-6423

LA Baton Rouge
Sesco Inc
2852 Kalurah St
504-344-4153

MA Wakefield
Pat Jenks Associates
607 North Ave
617-246-1590

MI Farmington Hills
Anderson Electronics Inc
28075 New Market St
313-553-7600

MN Eden Prairie
Busch Electronics Inc
16002 Valley View
612-937-1137

NJ Cedar Grove
KLS Associates Inc
1384 Pompton Ave
201-785-4450

NM Albuquerque
Rustco Enterprises
127 General Somervell NE
505-292-2741

NC Greensboro
Sesco Inc
2303 W Meadowview Rd
919-855-1394

OH Dayton
Instrumentation Systems Inc.
1250 W Dorothy Ln
513-294-2838

OH Cleveland
Instrumentation Systems Inc.
3645 Warrensville Center Rd
216-561-6100

OK Tohsa
Sesco Inc
9726 E 42nd St
918-622-3868

OR Portland
Scientific Devices
2035 SW 58th
503-292-6934

PA Pittsburgh
Instrumentation Systems Inc
201 Penn Center Blvd
412-243-1111

PA Willow Grove
Powell-Pendergraph Inc
801 Easton Rd
215-657-0330

TX Houston
Sesco Inc
4540 West 34th St
713-688-9656

TX Dallas
Sesco Inc
13531 N Central Expwy
214-231-9364

TX San Antonio
Sesco Inc
4438 Centerview Dr
512-733-1032

VA Glen Allen
Powell-Pendergraph Inc
8816 Washington Hwy
804-264-2341

WA Bellevue
Scientific Devices
10843 NE 8th St
206-454-0900

TERMINAL DATA CORP

11878 Coakley Circle
Rockville, MD 20852
301-881-7655
Contact: L Teitelbaum
■ Products & Services
Acoustic couplers
Modems, limited distance
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modem eliminators
290
Electrical-parameters test equipment
Cartridges
Disc drives, floppy
Discs, floppy
Disc packs
Floppy disc recorders
Tape, magnetic
Tape, paper
Data entry terminals
Programmable terminals
Portable data entry terminals
Video data terminals (KSR)
Cables, electrical prefabricated extending
Code converters
Computer/communications interfaces
Furniture, cabinets, terminal enclosures
Protocol converters
Lease and resale organizations
Maintenance organizations
Used equipment

Branch Sales Offices:

IL Addison
R Edward Stemm
17 W 480 Lake St
312-279-2440

MD Columbia
S A Computer Supplies
7181 Peace Chimes
301-997-4949

NJ Wayne
R A Sales
30 Galeso Dr
201-256-8500

OH Medina
McShane Inc
Box 523
216-725-4568

ONTARIO, CANADA

Ottawa
L Albert Assoc
2264 Stevenage Dr
613-737-5941

TERMINAL RENTALS INC

PO Box 1484
Orange, CA 92668
714-832-2414
Contact: Gary Koopman
■ Products & Services
Acoustic couplers
Cassettes
Programmable terminals
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Paper for terminals
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

AZ Phoenix
Terminal Rentals Inc
2430 S 20 St
602-258-4466
CA Tustin
Terminal Rentals Inc
2722 Walnut Ave
714-832-2414
CA San Jose
Terminal Rentals Inc
2444 Moorpark Ave
408-292-9915

TERMINAL SPECIALTIES INC

3999 S Main St., Suite S7
Salt Lake City, UT 84107
801-262-7100
Contact: Frank Richins
■ Products & Services
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Disc drives, floppy
Bar code readers
Batch terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)
Word processors, communicating
Cables, electrical prefabricated extending
Data access arrangement devices
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

IL Palatine
Data Displays Inc
330 West Colfax
312-358-6240
MA Chelmsford
Computer Peripherals of New
England
20 Brentwood Rd
617-272-7380

MN Minneapolis
Stan Clothier Co Inc
7423 Washington Ave S
612-944-3456
PA Philadelphia
Terminal Specialties
445 Green Ln
215-483-4244
TX Houston
Peripheral Products Inc
5401 Mitchelldale
713-681-8558

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

TERRACOM

9020 Balboa Ave
San Diego, CA 92123
714-278-4100
Contact: Robert Boulio
■ Products & Services
Multiplexers, time division
Earth stations
Microwave/laser systems
Voice digitizers

TESDATA SYSTEMS CORP

7921 Jones Branch Dr
McLean, VA 22102
703-827-4000
Advertising page 78
Contact: Larry Hart
■ Products & Services
Data content monitors
Electrical-parameters test equipment
Protocol analyzers
Response-time monitors
Network management centers
Technical control centers

Branch Sales Offices:

CA San Mateo
Tesdata Systems Corp
1720 So Amphlett Blvd
415-573-6022
CA El Segundo
Tesdata Systems Corp
999 No Sepulveda Blvd
213-640-1155
IL Deerfield
Tesdata Systems Corp
2275 Halfday Rd
312-948-8700
MI Southfield
Tesdata Systems Corp
27777 Franklin Rd
313-352-2890
NJ Englewood Cliffs
Tesdata Systems Corp
333 Sylvan Ave
201-871-1300
RI Providence
Tesdata Systems Corp
203 S Main St
401-351-1803
TX Houston
Tesdata Systems Corp
9219 Katy Frwy
713-461-4606
VA McLean
Tesdata Systems Corp
7921 Jones Branch Dr
703-827-4144
ENGLAND Slough
Tesdata Ltd
Tesdata House; Hatfield Rd
011-44-753-71961

FRANCE

ISE Paris
Tesdata SA
104 rue de Castanary
533-7300

GERMANY, WEST

Frankfurt
Tesdata GmbH
Am Lindenbaum 24
49-611-520181

TEXAS INSTRUMENTS DIGITAL
SYSTEMS GROUP

PO Box 1444, MS 7784
Houston, TX 77001
713-937-2016
Contact: Terminal Marketing
■ Products & Services
Front-end processors
Minicomputers
DDP systems
Cartridge drives
Disc drives, floppy
Tape drives, magnetic
Programmable terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Video data terminals (KSR)
Video data terminals (RO)

Branch Sales Offices:

AL Birmingham
Texas Instruments Inc
152C W Valley Ave
205-942-3337
AZ Phoenix
Texas Instruments Inc
8102 N 23 Ave
602-249-1313
CA Costa Mesa
Texas Instruments Inc
3186 Airway
714-540-7311
CA El Segundo
Texas Instruments Inc
831 S Douglas St
213-973-2571
CA Sacramento
Texas Instruments Inc
1900 Point West Way
916-929-0961
CA San Diego
Texas Instruments Inc
4333 Viewridge Ave
714-278-9600
CA San Francisco
Texas Instruments Inc
100 California St
415-781-9470
CA Sunnyvale
Texas Instruments Inc
776 Palomar Ave
408-732-1840
CO Denver
Texas Instruments Inc
9725 E Hampden Ave
303-751-1780
CT Hamden
Texas Instruments Inc
2405 Whitney Ave
203-281-0074
FL Fort Lauderdale
Texas Instruments Inc
4600 W Commercial Blvd
305-733-4660

FL	Winter Park Texas Instruments Inc 1850 Lee Rd 305-644-3535	OH	Cleveland Texas Instruments Inc 28790 Chagrin Blvd 216-464-2990	QUEBEC, CANADA	St Laurent Texas Instruments Inc 945 McCaffrey 514-341-5224
GA	Atlanta Texas Instruments Inc 3300 Northeast Exprwy 404-452-4600	OH	Dayton Texas Instruments Inc 4124 Linden Ave 513-258-3877	ARGENTINA	Buenos Aires Texas Instruments Argentina SAICF 1000-Correo Central 7481141
HI	Honolulu Texas Instruments Inc 1600 Kapiolani Blvd 808-955-2617	OK	Tulsa Texas Instruments Inc 3105 E Skelley Dr 918-749-9546	AUSTRALIA	Sydney Texas Instruments Ltd Box 106 NSW 2113 03 887-1122
IL	Arlington Heights Texas Instruments Inc 515 W Algonquin Rd 312-640-2900	OR	Beaverton Texas Instruments Inc 10700 SW Beaverton Hwy 503-641-7880	AUSTRALIA	Victoria Texas Instruments Australia Ltd 60 Albert Rd 03 6995788
IL	Peoria Texas Instruments Inc 6500 N University Pl 309-692-6016	PA	Coraopolis Texas Instruments Inc 420 Rouser Rd 412-771-8550	AUSTRIA	A-1030 Vienna Texas Instruments Gsmbh Rennweg 17 724186
IN	Indianapolis Texas Instruments Inc 5726 Professional Cir 317-248-8555	PA	Ft Washington Texas Instruments Inc 575 Virginia Dr 215-628-3434	BELGIUM	Bruxelles 1130 Texas Instruments Belgium SA Rue de la Fusee 1/720.80.00
IN	Fort Wayne Texas Instruments Inc 2020 Inwood Dr 219-424-5174	TN	Brentwood Texas Instruments Inc 2 Maryland Farm 615-373-5190	DENMARK	Copenhagen Texas Instruments A/S 2730 Herlev 01/91.74.00
LA	Baton Rouge Texas Instruments Inc 9052 Shady Bluff 504-261-2329	TN	Memphis Texas Instruments Inc 2600 Nonconah Blvd 901-345-3393	ENGLAND	Bedford Texas Instruments Ltd Manton Ln;M/S 4223 0234-67466
MA	Waltham Texas Instruments Inc 504 Totten Pond Rd 617-890-7400	TX	Dallas Texas Instruments Inc 8001 Stemmons Exprwy;M/S 3108 214-689-4460	ENGLAND	Cheshire Texas Instruments Ltd Battersea Rd 061-442-8448
MI	Southfield Texas Instruments Inc 24293 Telegraph Rd 313-353-0830	TX	Houston Texas Instruments Inc 9900 Southwest Frwy 713-776-6577	ENGLAND	Slough Texas Instruments Ltd 186 High St 0753-33411
MN	Edina Texas Instruments Inc 7625 Parklawn Ave 612-830-1600	TX	San Antonio Texas Instruments Inc 1938 Northeast Loop 410 512-828-9101	FINLAND	Helsinki Texas Instruments Finland Box 53 90-408 300
MO	Kansas City Texas Instruments Inc 8080 Ward Pkwy 816-523-2500	UT	Salt Lake City Texas Instruments Inc 3672 W 2100 So 801-973-6310	FRANCE	Lyon Texas Instruments France 30-31 Quai Rambaud 78 42 78 50
MO	St Louis Texas Instruments Inc 2368 Schuetz 314-569-0801	VA	Arlington Texas Instruments Inc 1745 Jefferson Davis Hwy 703-553-2200	FRANCE	Paris Texas Instruments France 92350 Le Plessis Robinson 1 630-2343
NE	Omaha Texas Instruments Inc 407 N 17 St 402-330-2510	VA	Richmond Texas Instruments Inc 2737 McRae Rd 804-320-5802	FRANCE	06270 Villeneuve-Loubet;Nice Texas Instruments France Boite Postale 5 93 20.01.01
NJ	Clark Texas Instruments Inc 1245 Westfield Ave 201-574-9800	WA	Bellevue Texas Instruments Inc 700 112 St NE 206-455-1711	GERMANY, WEST	Germany Texas Instruments Deutschland GmbH 111 Hagen 43 0201/23 35 51
NY	Albany Texas Instruments Inc 125 Wolf Rd 518-459-5260	WI	Brookfield Texas Instruments Inc 205 Bishops Way 414-784-1323		
NY	Melville Texas Instruments Inc 1 Huntington Quadrangle 516-752-1555		BRITISH COLUMBIA, CANADA		
NY	New York Texas Instruments Inc 1270 Ave of the Americas 212-246-6165		Vancouver BC Texas Instruments Inc 10451 Shellbridge Way 604-278-4871		
NY	Rochester Texas Instruments Inc 1210 Jefferson Rd 716-461-1800		ONTARIO, CANADA		
NC	Charlotte Texas Instruments Inc 1 Woodlawn Green 704-527-0930		Ottawa ON Texas Instruments Inc 436 MacLaren St 613-233-1177		
			ONTARIO, CANADA		
			Richmond Hill ON Texas Instruments Inc 280 Centre St E 416-884-9181		

GERMANY, WEST

Germany
Texas Instruments Deutschland
GmbH
6236 Eschborn
06196/4096

GERMANY, WEST

Germany
Texas Instruments Deutschland
GmbH
8050 Freising
08161/80-1

GERMANY, WEST

2000 Hamburg
Texas Instruments Deutschland
GmbH
040/2201156

GERMANY, WEST

8000 Munchen 81
Texas Instruments Deutschland
GmbH
089/32 50 11

ITALY

Milan
Texas Instruments Italia SPA
20093 Cologno Monzese/Miland
02 2532451

ITALY

Turin
Texas Instruments Italia SPA
10100 Torino
011 832276

ITALY

Roma
Texas Instruments Italia SPA
Via Salaria 1319
06 6917157

JAPAN

Minato-Ku
Tas Instruments Inc
3-6-12 Kita-Aoyama
03 498-2111

JAPAN

Yodogawa-Ku Osaka 532
Texas Instruments Asia Ltd
9-2 5-Chome Nishi Nakajima-Cho
06-304-9300

NETHERLANDS

1180 G Amstelveen
Texas Instruments Holland BV
20/47.33.91

NORWAY

Oslo 1
Texas Instruments Norway A/S
Kr Augusts gt 13
02 206040

SINGAPORE

Republic of Singapore
Texas Instruments Asia Ltd
990 Bendemeer Rd
258-1122

SPAIN

Barcelona
Texas Instruments Espana SA
C/Balmes 89-91 -2 4
03/2152950

SWEDEN

S-100 54 Stockholm
Texas Instruments Sweden AB
08/235480

SWITZERLAND

8040 Zurich
Texas Instruments Switzerland
Aargauerstrasse 250
01643455

3M COMPANY

STATIC CONTROL DIV
3M Center-223-2SW
St Paul, MN 55144
612-733-9420
Contact: Robert J Kunz

Want to receive announcements of
new products?
Turn to **UpDate Service Card, page
201.**

TIME & SPACE PROCESSING INC

10430 N Tantau Ave
Cupertino, CA 95014
408-996-2200
Contact: Ken Krechmer
■ Products & Services
Digitized-voice processors
Voice adapters
Voice digitizers

Branch Sales Offices:

MI Grand Rapids
Time and Space Processing Inc
3040 Charlevoix SE
616-942-7142

VA

Arlington
Time and Space Processing Inc
2300 Ninth St South
703-920-6031

ONTARIO, CANADA

Ottawa
Peter Lawrence
239 Grandview Rd
613-226-3227

JAPAN

Tokyo
Rikei Corp
1-18-14 Nishi-Shimbashi-Minato
Ku
03-345-1411

TIMEPLEX INC

One Communications Plaza
Rochelle Park, NJ 07662
201-368-1113

Advertising page 40

Contact: Bill Smith

■ Products & Services

Concentrators
Front-end processors
Minicomputers
Multiplexers, frequency division
Multiplexers, time division
Inverse multiplexers
Multiplexers, statistical (intelligent)
Multiplexers, group band
Packet processors
Modems, limited distance
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Network management centers
Technical control centers
Automatic calling units
Error controllers

Branch Sales Offices:

CA San Jose
Timeplex Inc
1796 Technology Dr
408-288-9650
CA Marina Del Rey
Timeplex Inc
4676 Admiralty Way
213-822-8560

CO

Thornton
Timeplex Inc
13007 Clayton Ct
303-629-1894

GA

Atlanta
Timeplex Inc
3300 Buckeye Rd
404-452-1640

MO

St Louis
Timeplex Inc
1810 Craig Rd
314-576-7005

NY

New York
Timeplex Inc
2 Penn Plaza
212-564-5261

TIMES WIRE & CABLE
DIV OF TIMES FIBER
COMMUNICATIONS INC

358 Hall Av
Wallingford, CT 06492
203-265-8500
Contact: John Palasciano
■ Products & Services
Cables, electrical prefabricated extending
Cables, lightwave (optical fiber)

Branch Sales Offices:

AL Huntsville
20th Century Mktg
Box 6127, Hertz Skycenter
205-772-9237

AZ

Scottsdale
Mercury Engineering Sales
Box 3130
602-994-5054

CA

Pico Rivera
Westrep
9519 Telegraph Rd
213-949-2551

CO

Denver
Lindberg Co
6140 E Evans Av
303-758-9033

FL

Ft Lauderdale
CBC Elect
3876 W Commercial Blvd
305-484-7330

HI

Honolulu
Dougherty Enterprises
1001 Dillingham Blvd
808-847-4144

IL

Berkeley/Hillside
Balhorn & Roeser
1758 Taft Av
312-449-3900

KS

Overland Pk
PMA Corp
5750 W 95 St
913-381-0004

MD

Rockville
Mechtronics Sales Inc
Box 1037
301-340-2130

MA

Clinton
F J Coleman & Co
Box 241
617-368-0116

MI

Farmington Hills
Lowell-Wendt Mktg
27660 Farmington Rd
313-553-9800

NY

Syracuse
Electra Sales Corp
104 Pickard Dr
315-455-5783

NC

Winston-Salem
DGW Inc
Box 5316
919-768-7166

- OH Cleveland
Bachr Greenleaf Assocs
14700 Detroit Ave
216-221-9030
- PA Glenside
The Griffin Co
363 Glenside Av
215-646-8383
- TX Dallas
Ammon & Rizos
255 LBJ Frwy
214-233-5592
- WA Bellevue
Eltech
13219 Northrup Way
206-643-4330
- ONTARIO, CANADA
Markham
Deskin Sales Corp
77B Steelcase Rd W
- TOPAZ DPP DIV
12638 Beatrice St
Los Angeles, CA 90066
213-390-8931
Contact: Alan Munla
■ Products & Services
Power Distribution-Regulation
Uninterruptible power supplies, line
correctors, etc
- Branch Sales Offices:
- CA Carson
Computer Facilities Service Grp
1007 Dominguez
213-515-7457
- CA San Mateo
DATASYTE
Box 1811 St Matthews
415-579-1110
- CA Rancho Cordova
Cal-Mod
11505 Douglas Rd
916-351-0745
- CO Denver
Erice Business Interiors
755 S Federal Blvd
303-922-3638
- FL Miami
Data Supply Inc
4825 NW 165th St
305-625-8017
- GA Atlanta
Holman-Lobsinger
5299 Roswell Rd NE
404-256-9120
- HI Honolulu
E D P Products
743 Waiakamile Rd
808-845-6417
- IA Des Moines
Tab Products
3832 Douglas
515-277-6104
- KS Shawnee
Atech
Box 3334
913-268-9644
- LA New Orleans
Associated Manufacturers Agents
Inc
Box 50843
504-581-7200
- MI Lansing
Data Supplies Company
320 N Washington
517-484-0912
- MI Bloomington
Compu-Site Corp
1500 E 79th St
612-854-6062
- MI Birmingham
Thibodeau Engineering
725 S Adams
313-642-6620
- MO St Louis
Conner Universal
8216 Brentwood Ind Dr
314-644-4640
- NH Londonderry
Power Conversion Sys
4k Professional Bldg
603-434-2371
- NJ Clifton
Polygon Data Products
1114 Clifton Ave
201-773-3100
- NJ Cherry Hill
Gary Pache
2091 Springdale Rd
609-424-9620
- NM Albuquerque
Sun Data Systems
16 Casa Hermosa NE
505-292-1022
- NM Albuquerque
Tremby Associates
119 Quincy NE
505-266-8616
- NY New York
Walter Robinson
2919 Greene Pl
212-792-2250
- NY Peekskill
Tony Ianniello
#6 Hood Pl
914-528-5149
- NY E Syracuse
Ossman Instruments Inc
6666 Old Collamer Rd
315-437-6666
- NC Matthews
Critical Power Sys
Box 6
704-882-1195
- OH Hudson
Roger J Benton Co
Box 2199
216-650-0150
- OH Dayton
Energy Management Equip Co
2176 Hewitt Ave
513-434-7130
- OK Oklahoma City
Clarence Deal
6616 Lyrewood Ln
405-722-7597
- OR Portland
Oregon Data Products
2828 SW Corbett
503-223-3232
- PA Pittsburgh
Keystone Forms & Supply
666 Washington Rd
412-341-2001
- TN Nashville
O'Neal Lighting
Box 15885
615-383-7930
- TN Memphis
LDA Sales
Box 16247
901-743-3111
- TX Houston
System Technology Assoc
17111 Rolling Creek Dr
713-440-8340
- VA Annandale
Government Sales Inc
7023 Little River Tnpk
703-354-4065
- WA Issaquah
William A Lemley
19818 SE 23rd St
206-392-2161
- WI Milwaukee
The Christofferson Co
6727 N Industrial Rd
414-353-0517
- TOPAZ INC
3855 Ruffin Rd
San Diego, CA 92123
714-279-0831
Contact: Jerry McAllister
■ Products & Services
Uninterruptible power supplies, line
correctors, etc
- Branch Sales Offices:
- AK Anchorage
John P Bagoy & Assoc
3210 Rampart Dr
907-274-8531
- CA Cerritos
Traver Assoc
13153 E Beach St
714-521-0053
- CA La Jolla
Wheelock Assoc
Box 328
714-454-3473
- CA Sunnyvale
Lee Allen Assoc
540 Weddell Dr
408-734-2100
- CA Pasadena
A F Sales Engineering
1000 East Walnut St
213-681-5631
- HI Honolulu
Industrial Electronics
Box 125
808-533-6095
- IL Schaumburg
Carvel Engineering & Sales
870 E Higgins Rd
312-885-8800
- KS Shawnee
Atech
10704 W 52 Cir
314-441-5010
- MI Farmington Hills
Carter McCormick & Pierce
23995 Freeway Park Dr
313-477-7700
- NH Nashua
Power Conversion Systems
92 Main St
603-889-8262
- NJ Englewood Cliffs
Power Conversion and Control
Box 1251
201-569-0015
- NM Albuquerque
BFA Corp
3705 Westerfield NE
505-292-1212
- NY Syracuse
Ossmann Instruments
6666 Old Collamer Rd
315-437-6666
- PA Valley Forge
J E Cuesta & Co
Box 188
215-265-5800
- TX Houston
SESCO
4540 W 34 St
713-688-9656

WA Glen Allen
Powell-Pendergraph
8816 Washington Hwy
804-264-2341

ONTARIO, CANADA
Mississauga
Webster Instruments
Box 427
416-275-2270

DENMARK
Naerum
SC Metric A/S
02-80-42-00

ENGLAND
London
Euro Electronic Inst
27 Camden Rd
01-2672748/9

FINLAND
Tapiola
Finn Metric OY
90-46-08-44

FRANCE
Severes
Tekelec Airtronic
City des Bruyeres; Rue Carle
Vernet
1-027-75-35

GERMANY, WEST
Bremen
Euroatlas GmbH
Zum Panrepel 2
04-21-48631

ITALY
Milano
Silectron SPA
Via Boccaccio 2
02-899279

NETHERLANDS
Breda
Klaasing-Reuvers BV
Heerbaan 222
076-879520

NORWAY
Oslo
Metric AS
PB 80 Bekkelagshgd
02-28-26-24

SPAIN
Madrid
Unitronics SA
Princesa 1
242-52-04

SWEDEN
Banvaktsvagen
Scandia Metric AB
08-82-04-00

SWITZERLAND
Erenbach
Witmer Elektronik AG
Seestrasse 141
01-915-35-61

TRANSCOM INC
SUB OF HI-G INC
580 Spring St
Windsor Locks, CT 06096
203-623-2481
Contact: James J O'Donoghue
■ Products & Services
Modems, voice-grade, low-speed
(0-1,200 b/s)
Audio response units
Data entry terminals
Programmable terminals
Interactive terminals
Portable data entry terminals

TRANS-LUX CORP
110 Richards Ave
Norwalk, CT 06854
203-853-4321
Contact: Peter E Costello
■ Products & Services
Data entry terminals
Remote line printers
Teleprinters, impact
Teletypewriters
Video data terminals (RO)
Computer/communications interfaces
Paper for terminals

Branch Sales Offices:

FL Miami
Trans-Lux Corp
12294 SW 29 Terrace
305-221-2890
GA College Park
Trans-Lux Corp
510 Plaza Dr Airport Plaza
404-768-3728
IL Chicago
Trans-Lux Corp
175 W Jackson Blvd
312-922-6616
MI St Clair Shores
Trans-Lux Corp
21412 Pky
313-296-0830
NJ PeQuannock
Trans-Lux Corp
56 Third St
201-628-9266
NJ Lindenwold
Trans-Lux Corp
1006 Central Ave
609-346-0909
NY New York
Trans-Lux Corp
90 W St
212-349-8404
NY Baldwin
Trans-Lux Corp
3139 Western Blvd
516-764-1000
OH Parma Heights
Trans-Lux Corp
6822 Beersford Ave
216-845-8549
TX Dallas
Trans-Lux Corp
9982 Monroe Dr
214-357-1801
WA Reston
Trans-Lux Corp
11657 Newbridge Ct
703-281-8611

Products are listed alphabetically in
the **Products & Services Directory**,
page 5

TRANSNET CORP
1945 Rt 22
Union, NJ 07083
201-688-7800
Contact: Clarence J Reed
■ Products & Services
Acoustic couplers
Data entry terminals
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Teleprinters
Teleprinters, non-impact
Teletypewriters

Video data terminals (KSR)
Video data terminals (RO)

TRAN TELECOMMUNICATIONS CORP
A SUB OF AMDAHL CORP

2500 Walnut Ave
Marina Del Rey, CA 90291
213-822-3202
Advertising page Cover II
Contact: John Meaney
■ Products & Services
Concentrators
Modem sharing units
Multiplexers, time division
Multiplexers, statistical (intelligent)
Multiplexers, group band
Packet processors
Port selectors
Port sharing units
Remote network processors
Channel service units
Digital service units
Line drivers
Modems, limited distance
Modem eliminators
Protocol analyzers
RTS emulator
Network management centers
Computer/communications interfaces
Protocol converters
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment,
reconfiguration equipment
Switches, data communications, automatic
Data communications consultants

Branch Sales Offices:

AZ Glendale
TRAN
5803 W Palmar
602-931-7421
CA Los Angeles
TRAN Telecommunications Corp
523 W Sixth St
213-628-3252
GA Atlanta
Flex-Comm International
3379 Peachtree Rd NE
404-237-9242
IL Hinsdale
TRAN
15 Spinning Wheel Rd
312-654-4775
NJ Wayne
TRAN
1534 State Highway 23
201-694-5121
TX Austin
TRAN
7701 N Lamar
512-459-1211
VA Arlington
Gans & Pugh Assoc
2062 14 St N
703-527-3262
ONTARIO, CANADA
Toronto
TRAN Communications Ltd
1320 Shawson Dr
416-678-9504
ENGLAND
Swinden
Tran Telecommunications Ltd
112-118 Cricklade Rd
44-793-45676
ITALY
Milan
Digital Network Engineering SPA
Corso Porta Vigentina 33
392-546-1551

JAPAN

Tokyo
Sumitomo Shoji Kaisha Ltd
2.2 Hitotsubashi 1-chome
Chiyada-ku
03-217-6023

SOUTH AFRICA

Johannesburg
TRAN Systems Ltd
Box 31352 Braam 2017
11-724-0391

TREK INC

1674 Quaker Rd
Barker, New York 14012
Contact: Roger E Dunham
■ Products & Services
Electrical-parameters test equipment

Branch Sales Offices:

CA Inglewood
Basic Systems Inc
230 W Florence Ave
213-673-4300

CA Burlingame
BHL Associates
1 Edwards Ct
415-342-7894

OH Cleveland
Comtel Instruments
5827 Mayfield Rd
216-442-8080

TRENDATA/STANDARD MEMORIES

3400 Segerstrom Ave
Santa Ana, CA 92704
714-540-3605
Contact: Rex Orton
■ Products & Services
Concentrators
Acoustic couplers
Add-on main memory
Floppy disc recorders
Interactive terminals
Teleprinters, impact
Terminal controllers
Terminal interfaces
Video data terminals (KSR)
Protocol converters

Branch Sales Offices:

AZ Phoenix
Trendata/Terminals
221 E Camelback St
602-264-9524

CA Santa Ana
Trendata/Terminals
3400 W Segerstrom Ave
714-540-3605

CA San Francisco
Trendata/Terminals
649 Mission St
415-982-1230

CA San Diego
Trendata/Terminals
4250 Pacific Hwy
714-225-1422

CA Santa Clara
Trendata/Terminals
2362 Walsh Ave
408-727-4644

CT Hartford
Trendata/Terminals
Box 469
203-242-0755

FL Miami
Trendata/Terminals
1405 NW 167th St
305-624-2313

GA Atlanta
Trendata/Terminals
2028 Powers Ferry Rd
404-955-3944

IL Chicago
Trendata/Terminals
1420 Renaissance Dr
312-296-1184

MD Bethesda
Trendata/Terminals
4720 Montgomery Ln
301-986-0067

MA Dedham
Trendata/Terminals
850 Rear Provindency Hwy
617-329-5720

MI Detroit
Trendata/Terminals
23777 Greenfield St
313-569-7525

NJ Ringwood
Trendata/Standard Memories
Box 135
201-529-4545

NJ Union
Trendata/Terminals
Box 1656
201-964-6470

NY New York
Trendata/Terminals
555 West 57th St
212-977-4110

OR Tigard
Trendata/Terminals
6900 SW Haines Rd
503-620-2821

WA Federal Way
Trendata/Terminals
33100 Pacific Hwy So
206-838-2437

ONTARIO, CANADA
Downsview
Trendata/Terminals
125 Norfinch Dr
416-667-9815

ONTARIO, CANADA
Ottawa
Trendata/Terminals
2615 Blackwell St
514-866-6331

TRI DATA

505 E Middlefield Rd
Mountain View, CA 94043
415-969-3700

Contact: Chuch Espersen
■ Products & Services
Cartridges
Cartridge drives
Electronic mailboxes
Floppy disc recorders

Branch Sales Offices:

CA Los Alamitos
CSS Telecommunications
10915 Bloomsfield Rd
213-594-4574

IL Oakbrook
Howard Larsen
1000 Jorie
312-654-3644

NJ Fort Lee
Herb Sprafkin, Reg Mgr
2083 Center
201-947-2093

WA Seattle
CSS Telecommunications
8609 Roosevelt Way NE
206-527-4750

TRIFORMATION SYSTEMS INC

3132 SE Jay St
Stuart, FL 33494
305-283-4817
Contact: Guy Carboneau
■ Products & Services
Audio response units
Programmable terminals
Terminal interfaces
Word processors, communicating
Code converters
Computer/communications interfaces
Paper for terminals
Lease and resale organizations

Branch Sales Offices:

MN Maynard
Duxbury Sys Inc
56 Main St
617-897-8207

TX Houston
Systems Technology Assoc
Box 90057
713-440-8340

ONTARIO, CANADA

Willowdale
Larco Prods
2372 Bayview Ave
416-445-4433

TRITON ENGINEERING INC

16879 Oakmont Ave
Gaithersburg, MD 20760
301-948-8116
Contact: Byron B Simms
■ Products & Services
Line drivers
Data content monitors
Code converters
Computer/communications interfaces
Data security devices, encoder/decoders
Selection & transfer equipment, monitor &
test switching equipment
Selection & transfer equipment, patching
equipment

Branch Sales Offices:

MD Ashton
Blackwood Assoc
17904 Ednor View Tr
301-924-2858

TROMPETER ELECTRONICS INC

8936 Commanche Ave
Chatsworth, CA 91311
213-882-1020
■ Products & Services
Cables, electrical prefabricated extending
Data jacks and plugs
Switches, data communications, manual

TRT TELECOMMUNICATIONS CORP

1747 Pennsylvania Ave NW
Washington, DC 20006
202-862-4500
Contact: Kenneth W Gross
■ Products & Services
International record carriers
Message (including telegraph) carriers
Packet-switching carriers
Message switchers

Branch Sales Offices:

CA Los Angeles
3407 W 6th St
213-383-3701

CA Mountain View
2483 Old Middlefield Way
415-964-2622

CA San Francisco
141 Battery St
415-956-5655

- DC Washington
1747 Pennsylvania Ave NE
202-862-4553
- FL Miami
127 SE Second Ave
305-358-3308
- FL Ft Lauderdale
Box 8876
305-792-5100
- GA Atlanta
550 Pharr Rd NE
404-233-5447
- IL Chicago
230 N Michigan Ave
312-782-8605
- LA New Orleans
344 Camp St
504-524-1038
- LA Pearl River
Drawer E
504-863-5354
- MA Wellesley Hills
14 Mica Ln
617-237-6057
- NJ South River
52-54 Main St
201-257-9020
- NY New York
630 Third Ave
212-986-2250
- NY New York
26 Broadway
212-635-2120
- OH Cleveland
Box 38070
216-235-3333
- PA Pittsburgh
1423 Park Bldg
412-355-0605
- TX Dallas
13773 N Central Expy
214-234-8088
- TX Houston
2537 S Gessner
713-781-4976
- PUERTO RICO
Hato Rey
Box 2133
809-725-8896
- ARGENTINA
Buenos Aires
Lacarra 1551
69-4435
- BELGIUM
Ninove
13 Langemuntstraat
054-338462
- BOLIVIA
La Paz
Edificio Ingavi 50
35-8277
- BRAZIL
Rio de Janeiro
Rua Pompeii Loureiro 36
275-8602
- CHILE
Santiago
Paseo Ahumada
72-3507
- COLOMBIA
Bogota
Apartado Aero 15509
257-7819
- ECUADOR
Quito
Calle Polit Lasso 449
23-9120
- ENGLAND
London
15 Stratton St
011-441-499-2795
- GERMANY, WEST
Dusseldorf
Grunstrasse 6
02-11-32 02-55
- GUATEMALA
Guatemala
14 Avenida 15-78
68-1326
- HONDURAS
Tegucigalpa
Apartado Postal 77-C
22-2203
- PANAMA
Panama
Calle Samuel Lewis
23-7325
- PERU
Lima
Altos Miraflores
31-9626
- VENEZUELA
El Conde
Apartado Postal 17566
781-6284
- THE TRW-FUJITSU CO
9841 Airport Blvd
Los Angeles, CA 90045
213-535-3821
Contact: Robert Nowacek
■ Products & Services
Front-end processors
Message switchers
Minicomputers
Remote network processors
DDP systems
Local network systems
Database processors
Data entry terminals
Programmable terminals
Interactive terminals
Computer/communications interfaces
Paper for terminals
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, distributed
data processing system vendors
Data communications software, intelligent
terminal vendors
Maintenance organizations
Branch Sales Offices:
- CA Los Angeles
The TRW-Fujitsu Company
9841 Airport Blvd
213-535-3777
- CA San Francisco
The TRW-Fujitsu Company
1750 Montgomery St
415-391-4095
- CO Evergreen
The TRW-Fujitsu Company
3560 Hwy 74
303-674-0475
- CT Farmington
The TRW-Fujitsu Company
270 Farmington Ave
203-677-2388
- FL Orlando
The TRW-Fujitsu Company
3606 Silver Star Rd
800-327-6200
- GA Atlanta
The TRW-Fujitsu Company
230 Peachtree St NW
404-688-6832
- IL Oak Brook
The TRW-Fujitsu Company
1000 Jorie Blvd
312-986-6400
- KY Louisville
The TRW-Fujitsu Company
963 Starks Bldg
502-585-2298
- MD Columbia
The TRW-Fujitsu Company
5565 Sterrett Pl
Waltham
- MA The TRW-Fujitsu Company
1605 Trapelo Rd
617-890-2424
- MN Edina
The TRW-Fujitsu Company
5100 Edina Industrial Bldg
612-831-0909
- NJ Hasbrouck Hts
The TRW-Fujitsu Company
377 Route 17
201-288-9205
- NJ Springfield
The TRW-Fujitsu Company
90 Route 22 at Stern Ave
201-379-1330
- NY NYC
The TRW-Fujitsu Company
666 5th Av
212-765-7900
- NY Buffalo
The TRW-Fujitsu Company
80 Suggs Rd
716-634-6336
- OH North Canton
The TRW-Fujitsu Company
3069 Chaucer NE
216-493-4711
- OH Cincinnati
TRW CSD
4511 Reading St
513-242-6720
- OR Tigard
The TRW-Fujitsu Company
7100 SW Hampton
503-620-6775
- PA Gibsonia
The TRW-Fujitsu Company
5465 Wm Flynn Hwy
412-443-8440
- PA Lancaster
The TRW-Fujitsu Company
2840 Southwick Dr
717-569-0873
- RI Providence
The TRW-Fujitsu Company
169 Weybosset St
401-274-8902
- TX Dallas
The TRW-Fujitsu Company
1770 Viceroy Dr
214-630-2540
- TX Austin
The TRW-Fujitsu Company
10600 Morning Dove Dr
512-258-1053
- TX Dallas
The TRW-Fujitsu Company
14330 Midway Rd
214-386-0911
- WI Brookfield
The TRW-Fujitsu Company
3490 N 127th St
414-781-1511

For further catalog information, turn to
UpDate Service Card, page 201.

WI Green Bay
The TRW-Fujitsu Company
1342 Sky Lark Ln
800-558-8133

TRW VIDAR
1344 Crossman Avenue
Sunnyvale, CA 94086
408-745-6360
Contact: Richard Chapple
■ Products & Services
Multiplexers, time division
Microwave/laser systems

Branch Sales Offices:

CA Mountain View
TRW Vidar
77 Ortega Ave
415-961-1000
GA Atlanta
TRW Vidar
4340 Georgetown Sq
404-452-1030
MN Hastings
TRW Vidar
Box 368
612-437-1401
NY Fairport
TRW Vidar
550 Fairport Pk
716-377-2230
TX Richardson
TRW Vidar
Box 276
214-238-8260

TURNKEY SYSTEMS INC

50 Washington St
Norwalk, CT 06854
203-853-2884
Contact: Robert H Bouton
■ Products & Services
Teleprocessing monitors

Branch Sales Offices:

CA Los Gatos
Turnkey Systems Inc
59 North Santa Cruz
408-395-6600
CA Costa Mesa
Turnkey Systems Inc
1503 S Coast Dr
714-540-3742
GA Atlanta
Turnkey Systems Inc
2814 New Spring Rd
404-432-2149
IL Lombard
Turnkey Systems Inc
2200 S Main St
312-629-6404
MI Southfield
Turnkey Systems Inc
21711 W Ten Mile Rd
313-353-7430
TX Dallas
Turnkey Systems Inc
12606 Greenville Ave
214-386-8604
ONTARIO, CANADA
Markham
Turnkey Systems Inc
920 Denison St
416-495-0182
AUSTRALIA
North Sydney
On-Line Systems Pty Ltd
100 Pacific Hwy
ENGLAND
Croydon Surrey
TSI Inter Ltd
22 Park St

FRANCE
Paris
Turnkey Systems France
3 rue d l'Arrivee

GERMANY, WEST
Muenchen
TSI International GmbH
Hochbruckenstrasse 16

ITALY
Milan
Selestia Sistemi SPA
Via Meravigli 16

JAPAN
Chuo-ku, Tokyo
Nissho Electronics Corp
1-12-22 Tsukiji 1-Chome

NEW ZEALAND
Wellington
Commercial Data Processing
71 Boulcott St

SPAIN
Madrid
General de Informatica SA
c/Agustin de Foxa

SWEDEN
Stockholm
SDP Software
Kungsgatan 65

VENEZUELA
Caracas
Analisys, Programacion y
Software
Edificio Exa, Pisa 8; Av
Libertador

TWO PI CORP
3105 Patrick Henry Dr
Santa Clara, CA 95050
408-988-1234
Contact: Clay Marr
■ Products & Services
Minicomputers

Branch Sales Offices:

CA Santa Clara
Two Pi Corporation
3105 Patrick Henry Dr
408-988-1234
MD Annapolis
Two Pi Corporation
238 West St
301-269-0013

TYMNET INC
20665 Valley Green Dr
Cupertino, CA 95014
408-446-7000
Contact: H Richard Cossaboon Jr
■ Products & Services
Message (including telegraph) carriers
Packet-switching carriers
Value-added carriers
Message switchers
Minicomputers
Packet processors
Remote network processors
Network management centers
Local network systems
Programmable terminals
Teleprinters, impact
Teleprinters, non-impact
Teletypewriters
Terminal interfaces
Video data terminals (KSR)
Video data terminals (RO)
Data communications software,
communications processors vendors
Lease and resale organizations
Maintenance organizations

Branch Sales Offices:

CA El Segundo
Tymnet Inc
2221 El Segundo Blvd
213-640-0278
CA San Francisco
Tymnet Inc
44 Montgomery St
415-788-1045
CA Santa Clara
Tymnet Inc
2700 Augustine Dr
408-727-0840
CO Englewood
Tymnet Inc
5680 S Syracuse Cir
303-741-5080
CT Norwalk
Tymnet Inc
50 Washington St
203-866-1507
GA Roswell
Tymnet Inc
626 Holcomb Bridge Rd
404-998-9153
IL Oak Brook
Tymnet Inc
1211 W 22nd St
312-665-2780
MD Vienna
Tymnet Inc
8150 Leesburg Pike
703-827-9110
MA Woburn
Tymnet Inc
304 Cambridge Rd
617-933-7588
MI Flint
Tymnet Inc
2503 S Linden Rd
313-733-6200
MN Minneapolis
Tymnet Inc
101 W Burnsville Pky
612-894-4640
MO Creze Coeur
Tymnet Inc
711 Old Ballas Rd
314-569-0028
NJ Lyndhurst
Tymnet Inc
1200 Wall St W
201-460-0450
NY New York
Tymnet Inc
260 Madison Ave
212-490-6713
NY Pittsford
Tymnet Inc
642 Gregg Rd
716-248-5960
OH Westlake
Tymnet Inc
30400 Detroit Rd #204
216-835-7258
PA King of Prussia
Tymnet Inc
1003 B W 9th Ave
215-265-8170
TX Dallas
Tymnet Inc
6333 Harry Hines Blvd
214-637-7363
TX Houston
Tymnet Inc
11999 Katy Freeway
713-870-0913

FRANCE

De St-Cloud
Tymnet Communications
Cegi-Tymshare; 106 Bureaux de la
Colline
602-70-12

ULLMAN DEVICES CORP

664 Danbury Rd
Ridgefield, CT 06877
203-438-2891

ULTRACHEM

1400 N Walnut St
Wilmington, DE 19899
302-571-8520
Contact: Robert Whiting

UNGERMANN-BASS

2560 Mission College Blvd
Santa Clara, CA 95050
408-496-0111
Contact: James Jordan
■ Products & Services
Local network systems
Computer/communications interfaces
Protocol converters
Switches, data communications, automatic

Branch Sales Offices:

CA Santa Clara
Peter Kirschner
2560 Mission College Blvd
408-496-0111

UNICOM COMPUTER CORPORATION

2829 Bridgeway Blvd
Sausalito, CA 94965
415-332-2585
Contact: Bambi Holmes
■ Products & Services
Add-on main memory
Disc drives, large
Tape drives, magnetic
Graphic display terminals
Remote line printers
Remote job entry terminals
Lease and resale organizations

UNITED DATA SERVICES CO INC

3024 N 33rd Dr
Phoenix, AZ 85017
602-269-2449
Contact: Oliver J Sullivan
■ Products & Services
Line sharing units
Modem sharing units
Port sharing units
Line drivers
Modem eliminators
Terminal interfaces
Cables, electrical prefabricated extending
Computer/communications interfaces
Pulse and signal regenerators

Branch Sales Offices:

AZ Phoenix
United Data Services Co Inc
3024 N 33 Dr
602-269-2449

UNITED STATES TRANSMISSION
SYSTEMS INC

One Whitehall St
New York, NY 10004
800-221-7267
Contact: Glen Lake
■ Products & Services
Specialized carriers
Telephone companies
Value-added carriers

Branch Sales Offices:

CA Los Angeles
Edward Sandstrom
727 West 7th St
213-622-2800
DC Washington
Harry Bruner
1707 L St NW
202-293-1470
GA Atlanta
Toy Lathan
2200 Century Pkwy
404-321-1014
IL Chicago
Milt Gussow
175 West Jackson Blvd
312-427-0030
LA New Orleans
Allen Coulange
1001 Howard Ave
504-566-0176
NC Charlotte
Ron Massingale
5600 Executive Center
704-568-8633
PA King of Prussia
Russ Tyson
Valley Forge Plaza
215-265-1195
TX Houston
John Badia
5100 Westheimer
713-622-5160
VA Lynchburg
John Patterson
807 Allied Arts Bldg
804-528-5446

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

UNITED TECHNOLOGIES CORP

United Technologies Bldg
Hartford, CT 06101

UNIVERSAL DATA SYSTEMS INC

5000 Bradford Drive
Huntsville, AL 35805
205-837-8100
Advertising page Cover IV
Contact: Geo R Grumbles
■ Products & Services
Modem sharing units
Modems, multipoint
Modems, multiport
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modems, voice-grade, high-speed
(4,800-9,600 b/s)
Modem eliminators
Data content monitors
Protocol analyzers
Response-time monitors
Automatic answering units
Automatic calling units
Data access arrangement devices

Branch Sales Offices:

AL Huntsville
FM Associates Ltd
2804 S Mem Pkwy
205-536-9990
CA Redondo Beach
Group Three Elect
2615 Manhattan Beach Blvd
213-973-7844

DC Washington
Powell-Pendergraph
7979 Old Georgetown Rd
301-656-4535
FL Longwood
Southern Data Assoc
400 Royal Palm Ct
305-831-3311
HI Honolulu
Gray Assoc
691 Kalanipuu St
808-395-8669
IL Rosemont
Information Systems Inc
9800 W Farragut
312-671-7780
MA Lowell
S & S Electronics Inc
80 Stedman St
617-459-2578
MN St Paul
Cahill Assoc
315 N Pierce St
612-646-7217
MO Grandview
Digital Systems Sales Inc
4006 E 137 Ter
816-765-3337
NJ Englewood
Tecnimat
500 Grand Ave
201-569-4200
NM Las Cruces
BFA Corp
312 W Parker
505-523-0601
NM Las Cruces
BFA Corp
532 Amador Ave
505-523-0601
NY DeWitt
DB Assoc
3307 Erie Blvd E
315-446-0220
PA Ambler
Data Engineering Co
25 Skippack Pike
215-542-9876
PA Pittsburgh
WKM Assoc Inc
90 Clairton Blvd
412-892-2953
TX Richardson
Data Applications Corp
1300 E Arapaho Rd
214-231-4846
VA Richmond
Powell-Pendergraph
Box 29643
804-264-2341
WA Bellevue
Pacific Northwest Elect
14264 SE Eastgate Way
206-641-6444
ONTARIO, CANADA
Rexdale
ESE Ltd
1780 Albion Rd
416-749-2271
ENGLAND
Croydon
Cole Electronics
105-107 Lansdowne Rd
01-6886822
ISRAEL
Tel-Aviv
Bitcom Agencies
Box 13161
03-481269

SWEDEN

Solna
Svea Data Commun
Box 3004
08-820335

U S INSTRUMENTAL RENTALS

2988 Campus Dr
San Mateo, CA 94404
415-572-6600
Contact: Brad Rulien
■ Products & Services
Data content monitors
Electrical-parameters test equipment
Protocol analyzers
Response-time monitors
Portable data entry terminals
Remote job entry terminals
Lease and resale organizations
Used equipment

Branch Sales Offices:

CA Burbank
US Instrument Rentals
1008 W Burbank Blvd
213-849-5861

CA San Mateo
US Instrument Rentals
700 S Claremont
415-592-9230

CO Morrison
US Instrument Rentals
6097 Colorow Dr
303-697-4362

IL Arlington Heights
US Instrument Rentals
511 West Golf Rd
312-981-1600

MD Rockville
US Instrument Rentals
1383 Piccard Dr
301-258-9888

MA Wakefield
US Instrument Rentals
591 N Av
617-246-1516

NJ Edison
US Instrument Rentals
505 Thornall Plaza
201-494-1500

TX Richardson
US Instrument Rentals
1744 No Greenville Ave
214-234-3392

TX Houston
US Instrument Rentals
6001 Culf Frwy
713-923-2222

ONTARIO, CANADA
Rexdale
US Instrument Rentals
44 Faskin Dr
800-268-4928

VALTEC CORP

99 Hartwell St
West Boylston, MA 01583
617-835-6082
Contact: Stephen C Lang
■ Products & Services
Multiplexers, time division
Lightwave (fiber optic) systems
Microwave/laser systems
FM systems
Modems, broadband, super-group
(to 230.4 kb/s)
Modem eliminators
Cables, lightwave (optical fiber)

Branch Sales Offices:

CA Pasadena
Advanced Techniques
3848 E Colorado Blvd
213-796-6187

MD Silver Springs
Carwithen Assoc Inc
1110 Fidler Ln
301-589-9040

MA Framingham
Sullivan Technical Sales
150 Speen St
617-620-0195

MN Satellite Beach
Reynolds & Assoc
476 North A1A
305-773-4790

NM Albuquerque
Trembly Assoc
119 Quincy NE
505-266-8616

WA Bellevue
Comtec
1715 114 Av SE
206-453-1188

ONTARIO, CANADA
Markham
RF Communications Ltd
120 Gibson Dr
416-495-1030

ENGLAND
London
Walmore Electronics Ltd
11-15 Betterton St
836-1228

GERMANY, WEST
Munchen
TS-Electronic
Widenmayerstr 50

NETHERLANDS
The Hague
Koning En Hartman
PO 8220 20 Koperwerf

SWEDEN
Vaxholm
Saven AB
Strandgatan 3

VAN SAN CORP
16735 E Johnson Dr
City of Industry, CA 91745
213-961-7211
Contact: Steve Holland
■ Products & Services
Furniture, cabinets, terminal enclosures

Branch Sales Offices:

ENGLAND
London
Power Equipment co
Kingsbury Works; Kingsbury Rd
01-205-0033

VARDON & ASSOCIATES

1401 Walnut Hill Lane
Irving, TX 75062
214-659-3800
Contact: Joseph Gaynor
■ Products & Services
Acoustic couplers
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Discs, floppy
Tape punch/reader, paper
Data entry terminals
Programmable terminals
Remote job entry terminals
Teleprinters

Teletypewriters

Video data terminals (KSR)
Word processors, communicating
Code converters
Computer/communications interfaces
Data access arrangement devices
Data communications consultants
Data communications software,
communications processors vendors
Data communications software, intelligent
terminal vendors
Lease and resale organizations
Maintenance organizations
Used equipment

VECTOR GRAPHIC INC

31364 Via Colinas
Westlake Village, CA 91361
213-991-2302
Contact: Jim Alexander
■ Products & Services
DDP systems
Add-on main memory
Disc drives, floppy
Disc drives, large
Programmable terminals
Teleprinters, impact
Video data terminals (KSR)
Word processors, communicating
Furniture, cabinets, terminal enclosures
Data communications software, intelligent
terminal vendors

Branch Sales Offices:

GA Atlanta
Vector Graphic
6520 Powers Ferry Rd
404-955-6196

NJ Summit
Vector Graphic
34 Maple St
201-522-1782

VEN-TEL INC

2390 Walsh Ave
Santa Clara, CA 95051
408-984-2727
Contact: David O Brallier
■ Products & Services
Acoustic couplers
Line drivers
Modems, limited distance
Modems, multipoint
Modems, voice-grade, low-speed
(0-1,200 b/s)
Modems, voice-grade, medium speed
(1,800-3,600 b/s)
Modem eliminators

VERBATIM CORP

323 Soquel Way
Sunnyvale, CA 94086
408-245-4400
Contact: Scott Cochran
■ Products & Services
Cartridges
Cassettes
Discs, floppy

Branch Sales Offices:

CA San Jose
Verbatim Corp
2025 Gateway Place
408-280-1342

CA Los Angeles
Verbatim Corp
1100 Glendon Av
213-824-9702

CA Walnut Creek
Verbatim Corp
1200 Mt Diablo Blvd
415-944-0713

- GA Snellville
Verbatim Corp
2250 North Rd
404-979-1212
- IL Oak Brook
Verbatim Corp
600 Enterprise Dr
312-654-1990
- KS Overland Park
Verbatim Corp
11030 Granada La
913-642-2185
- MA E Longmeadow
Verbatim Corp
15 Benton Dr
413-525-4919
- NJ Neptune
Verbatim Corp
7 Sarian Dr
201-922-8450
- PA Upper St Clair
Verbatim Corp
71 McMurray Rd
412-831-2211
- TX Kingwood
Verbatim Corp
818B Burning Tree Dr
713-358-3196
- TX Dallas
Verbatim Corp
11311 N Central Exprwy
214-696-2636
- VA Manassas
Verbatim Corp
7900 Sudly Rd
703-361-1166
- JAPAN Tokyo
Verbatim Far East Ltd
702 Hayama Bldg
03-446-2917
- SWITZERLAND Geneva
Verbatim SA
Case Postale 296
022-349055
- Get new product information when it breaks?
Turn to **UpDate Service Card, page 201.**
- VERBEX CORP
2 Oak Pk
Bedford, MA 01730
617-275-5160
Contact: Jim Waite
■ Products & Services
Word recognition units
Branch Sales Offices:
MA Bedford
Verbex Corp
2 Oak Pk
617-275-5160
- VERMONT RESEARCH CORP
Precision Park
North Springfield, VT 05150
802-886-2256
Contact: E Hinkley
■ Products & Services
Add-on main memory
Disc drives, large
Branch Sales Offices:
CA Lafayette
Vermont Research Corp
3650 Mt Diablo Blvd
415-283-3294
- TX Plano
Vermont Research Corp
651 E 18 St
214-423-8772
- VERSATEC INC
2710 Walsh Avenue
Santa Clara, CA 95051
408-988-2800
Contact: Bob Murray
■ Products & Services
Digital plotters
Remote line printers
Branch Sales Offices:
AZ Scottsdale
Versatec
6991 E Camelback Rd
602-941-1452
CA Santa Clara
Versatec
1333 Lawrence Expwy
408-985-5810
CA Newport Beach
Versatec
1400 N. Bristol St
714-752-5561
CA Pasadena
Versatec
251 S Lake Ave
213-796-1703
CO Denver
Versatec
4155E Jewel Ave
303-759-1090
CT Hamden
Versatec
105 Sanford St
203-281-7604
FL Altamonte Springs
Versatec
Cranes Roost Office Park
GA Atlanta
Versatec
6275 Barfield Rd NE
404-256-3427
IL Schaumburg
Versatec
650 Woodfield Dr
312-885-9610
KS Overland Park
Versatec
9101 West 110th St
913-341-8003
MD Rockville
Versatec
11820 Parklawn Dr
301-468-0960
MA Framingham
Versatec
10 Speen St
617-879-8520
MI Southfield
Versatec
24681 Northwestern Hwy
313-352-3703
NJ Union
Versatec
2400 Morris Ave
201-964-7101
NM Las Cruces
BFA Corp of AZ
Corner of Hadley and Motel Blvd
505-524-9693
NM Albuquerque
BFA Corp of AZ
1704 Moon NE
505-292-1212
- NY Melville
Versatec
555 Broad Hollow Rd
516-249-4422
- NY New Hartford
Versatec
No 1 Nouvelle Park
315-255-1251
- OH Miamisburg
Versatec
228 Byers Road
513-859-5021
- OH Cleveland
Versatec
20005 Lake Rd
216-331-0975
- OK Tulsa
Versatec
3035 East Skelly Dr
918-749-0968
- PA McMurray
Versatec
110 Hidden Valley Rd; Peters Township
412-941-2020
- PA Wayne
Versatec
999 Old Eagle School Road
215-293-0920
- TX Houston
Versatec
9100 Southwest Frwy
713-981-1967
- TX Dallas
Versatec
2964 LBJ Frwy
214-620-7620
- WA Bellevue
Versatec
1750 112NE
206-453-9368
- ONTARIO, CANADA Rexdale
Aherns & Sopher Ltd
31 Enterprise Rd
416-245-4848
- ARGENTINA Buenos Aires
Latindata SA
Pedro Chutro 3040
91-0356
- AUSTRALIA Artarmon
Datamatic Pty Ltd
60/64 Dickson Ave
43 3333
- AUSTRALIA Rydalmere NSW
Pacific Communications Pty Ltd
4 Easton St
02-638-6400
- BELGIUM Brussels
CN Rood SA
37 Place de Jamblinne De Meux
735-21-35
- BOLIVIA La Paz
Latindata Ltda
Au Arce 2396
23669-28786
- BRAZIL Rio de Janeiro
Cia T Janer
18 Rua Fonseca Teles
264-7422

BRAZIL

Sao Paulo
Cia T Janer
Avenida Henry Ford 833
289-0944

CHILE

Santiago
Latindata Ltd
Holanda 1310
42209-460205

DENMARK

Rodovre
A/S Datalog
Roskildevej 398
009 451 415133

ENGLAND

Berkshire
Versatec
27/35 London Rd
0635-31221

FINLAND

Kauniainen
Oy Findip AB
Teollisuustie 7
90 502255

FRANCE

Sevres
Tekelec-Airtronic
Cite des Bruyeres Rue Carle
Vernet
1-534-7535

GERMANY, WEST

Munich
Versatec GmbH
Sommerstrasse 35
089 61 14 005

GREECE

Athens
Kostas Karayannis
8 Omirou Street
32 30 305

HONG KONG

Hong Kong
Rikei Corp
57-59 Connaught Road C
5-450335

INDIA

New Delhi
C H Krishnan & Associates
C-24 New Delhi S Extension Part
II
694387

INDONESIA

Jakarta
P T Astra Graphia
Jalan Kramat Raya 43
358634-38

ISRAEL

Tel Aviv
Information Systems Ltd
Box 43070
03 483261 23

ITALY

Rome
Technitron SPRL
Via G Mangili 20
805 647

JAPAN

Tokyo
Fuji-Xerox Co Ltd
35 Akasaka 3-Chome Minato-Ku
03-585-3211

MALAYSIA FED OF

Petalina Jaya
Mecomb Malaysia Sdn Bhd
Box 24
773445

MEXICO

Mexico
Soluciones Graficas SA
Nicolas San Juan 968-301
905-575-5698

NETHERLANDS

Rijswijk
CN Rood BV
Box 42
070 99 63 60

NORWAY

Oslo
Saven A/S
Postbox 2111
2 35 62 50

PHILIPPINES

Makati Rizal
Decision Sys Corp
150 Amorsolo St; Legaspi Village
86-72-08

SINGAPORE

Singapore
Mechanical & Combustion
Engineering
100-12 Jalan Kilana
2713333

SOUTH AFRICA

Johannesburg
Photracomp Pty Ltd
Box 9072
836 2941

SPAIN

Madrid
Anadig Ingenieros
Amado Nervo 3
433 2412

SWEDEN

Vaxholm
Saven Dataelektronik AB
Strandgaten 3
0764 31580

SWITZERLAND

Geneva
Captronix SA
Ruede Lausanne
022 31 05 87

TAIWAN

Taipei
Sys-Com Computer Engineering Co
Box 48-130
02-70-22156-8

TURKEY

Ankara
UTE-Muhendistik
Guniz Sokak No 22/4
26 7182

VENEZUELA

Chacao Caracas
Datatec CA
Apartado Postal 60 216
239-42-22

VERSITRON INC

6310 Chillum Pl NW
Washington, DC 20011
202-882-8464
Contact: Alan R Belli
■ Products & Services
Modem sharing units
Multiplexers, time division
Port sharing units
Digitized-voice processors
Lightwave (fiber optic) systems
Line drivers
Modems, limited distance
Modem eliminators
MIL 188C adapters
Terminal interfaces
Switches, data communications, manual

Branch Sales Offices:

CA Mountain View
CSS Telecommunications Inc
2680 Bayshore Frontage Rd
415-964-4335

FL

Pompano Beach
Saber Assoc
4081 N Federal Hwy
800-432-3007

ONTARIO, CANADA

Nepean
Allcom Data Ltd
5A Caesar Ave
613-226-2340

VERTEX ELECTRONICS INC

150 Schmitt Blvd
Farmingdale, NY 11735
516-293-9880
Contact: Michael Scanzano
■ Products & Services
Modem eliminators
Cables, electrical prefabricated extending
Computer/communications interfaces
Power supplies
Switches, data communications, manual

Branch Sales Offices:

MA Beltsville
Vertex Mid-Atlantic Inc
10774 Tucker St
301-937-0180

OH

Cleveland
Vertex Wire & Cable
26309 Miles Ave

VIA WEST

2739 W Palm Ln
Phoenix, AZ 85009
602-269-3237
Contact: Ray Greer
■ Products & Services
Line sharing units
Modem sharing units
Inverse multiplexers
Port selectors
Port sharing units
Line drivers
Data content monitors
Protocol analyzers
Code converters
Computer/communications interfaces
Protocol converters

Branch Sales Offices:

AL Huntsville
Hamilton Avnet
4692 Commercial Dr
205-837-7210

AL

Huntsville
Pen-Tech
3322 Memorial Pkwy SW
205-881-9298

AK

Anchorage
Drew & Associates
Box 10-1888
907-349-7800

AK

Anchorage
Trans Alaska Data Systems
200 Center Ct
907-276-5616

AZ

Tempe
Hamilton Avnet
505 S Madison Dr
602-275-7851

CA

Costa Mesa
Avnet Electronics
350 McCormick Ave
714-754-6111

MA	Woburn Hamilton Avnet 50 Tower Office Pk 617-935-9700
MA	Wayland R H Associates Inc 325 Boston Post Rd 617-358-4701
MI	Livonia Hamilton Avnet 32487 Schoolcraft Rd 313-522-4700
MO	Hazelwood Hamilton Avnet 396 Brookes Ln 314-731-1144
MO	Earth City Hamilton Avnet 13734 Shoreline Ct 314-344-1260
NH	Nashua Service Technologies 32 Nightingale Rd 603-883-5369
NJ	Cherry Hill Hamilton Avnet 1 Keystone Ave 609-424-0110
NJ	Fairfield Hamilton Avnet 10 Industrial Rd 201-575-3390
NM	Albuquerque Hamilton Avnet 2524 Baylor SE 505-765-1500
NY	Melville Hamilton Avnet 5 Hub Dr 516-454-6000
NY	Rochester R G Engineering 3100 Monroe Ave 716-385-3021
NY	Rochester Hamilton Avnet 167 Clay Rd 716-457-9130
NY	Syracuse Hamilton Avnet 16 Corporate Cir 315-437-2641
NY	Rochester RG Engineering 3100 Monroe Ave 716-385-3021
NC	High Point Pen-Tech 1202 Eastchester Dr 919-883-9125
OH	Cleveland Hamilton Avnet 4588 Emery Industrial Pkwy 216-831-3500
OH	Dayton Hamilton Avnet 954 Senate Dr 513-433-0610
SC	Raleigh Hamilton Avnet 2830 Industrial Dr 919-829-8030
TX	Austin Hamilton Avnet 10508A Boyer Blvd 512-837-8911

TX Dallas
Hamilton Avnet
4445 Sigma Rd
214-661-8661

TX Houston
Hamilton Avnet
3939 Ann Arbor
713-780-1771

UT Salt Lake City
Hamilton Avnet
1585 West 2100 S
801-927-2800

WA Bellevue
Hamilton Avnet
14214 NE 21st St
206-746-8750

WI Edina
Hamilton Avnet
7449 Cahill Rd
612-941-3801

WI New Berlin
Hamilton Avnet
2975 Morrland Rd
414-784-4510

ONTARIO, CANADA
Etobicoke
Sak Data Products
311 Renforth Dr
416-622-9698

ONTARIO, CANADA
Mississauga
Hamilton Avnet
3688 Nashua Dr
416-677-7432

ONTARIO, CANADA
Mississauga
Data Terminal Mart
2703 Slough St
416-677-0184

ONTARIO, CANADA
Ottawa
Hamilton Avnet
1735 Courtwood Crescent
613-226-1700

QUEBEC, CANADA
St. Lauren
Hamilton Avnet
2670 Sabouin St
514-331-6443

VINYL PLASTICS INC
PO Box 451
Sheboygan, WI 53081
414-458-4664
Contact: M T Brandt
■ Products & Services
Furniture, cabinets, terminal enclosures

VOTRAX DIV
FEDERAL SCREW WORKS
500 Stephenson Highway
Troy, MI 48084
313-588-2050
Contact: Robert J Chencinski
■ Products & Services
Audio response units

Branch Sales Offices:

CA Mission Viejo
J H M Marketing Assoc
26572 Matias
714-589-9876

TX Houston
Texas Scientific; A Company of
Votrax
6515 Corporate Dr
713-777-7171

For further catalog information, turn to
UpDate Service Card, page 201.

ONTARIO, CANADA

Downsview
Electronetic Systems Ltd
62 Alness St
416-661-3673

ENGLAND

London
Commercial Inventory Service Co
Ltd
26-28 Bedford Row
0734-53031

GERMANY, WEST

Wiesbaden 6200
Votrax Div; Federal Screw Works
Reisstr 16
6121-463822

VYDEC INC

9 Vreeland Rd
Florham Park, NJ 07932
201-822-2100

■ Products & Services
Discs, floppy
Word processors, communicating
Ribbons and supplies for terminals and
printers

Branch Sales Offices:

AL Birmingham
Comdoc
2112 11th Ave S
205-251-9999

AK Anchorage
Word Pro Inc
420 L St
907-279-5559

AZ Phoenix
Vydec Inc
101 North First Ave
602-254-5048

AR Little Rock
Crockett Business Machines
3102 W Markhaem
501-663-9433

CA San Francisco
Vydec Inc
Three Embarcadero Center
415-398-2550

CA Sacramento
Vydec Inc
1400 K St
916-441-2677

CA San Diego
Vydec Inc
110 W "A" St
714-231-1838

CA Newport Beach
Vydec Inc
4440 Von Karman Ave
714-752-1045

CA Los Angeles
Vydec Inc
Two Century Plaza
213-552-5444

CA Sunnyvale
Vydec Inc
1153 Bordeaux Dr
408-734-4900

CA Fresno
Mid-State Office Systems
833 E Fern
209-233-0777

CA Bakersfield
General Office Machines Co Inc
1119 California Ave
805-327-3207

CA Chico
Ray Morgan Co
554 Rio Lindo Rd
916-343-6065

CO Denver
Vydec Inc
50 South Steel St
303-333-5415

CT Hartford
Vydec Inc
One Financial Plaza
203-247-9281

DE Wilmington
Vydec Inc
One Customs House Sq
302-575-0770

FL Tampa
Systemark of Florida
4950 W Kennedy Blvd
813-872-5613

FL Coral Gables
Business Machines of Miami Inc
302 Bird Rd
305-444-6146

FL Jacksonville
Commercial Office Prods Inc
3304 Beach Blvd
904-398-1478

FL Tallahassee
Commercial Office Products
2639 N Monroe
904-385-1138

FL Winter Park
Septemark Inc
1010 N Orlando Ave
305-830-2447

GA Atlanta
Vydec Inc
229 Peachtree St NE
404-659-6000

HI Honolulu
Benchmark Systems
900 Fort St
808-521-2651

ID Idaho Falls
Yost Office Systems
675 E Anderson
208-523-3549

ID Boise
Finch Brown Inc
2340 Vista Ave
208-342-9345

IL Bloomington
Vydec Inc
200 W Front
309-828-7327

IL Oakbrook
Vydec Inc
1415 W 22 St
312-920-5850

IL Chicago
Vydec Inc
One East Wacker Dr
312-467-5540

IN Indianapolis
Baker Business Products Inc
7212 N Shadeland Ave
317-842-0886

IN South Bend
St John Business Machines Inc
1134 Lincolnway E
219-282-2355

IN Evansville
Modern Business Systems Inc
3830 E Morgan St
812-477-9218

IA Des Moines
Modern Business Machines Inc
621 E 2nd St
515-280-3554

IA Davenport
Modern Business Systems
3546 Brady St

KS Topeka
Modern Office Methods
3214 W 29 St
913-272-7704

KS Shawnee Mission
Techmark Corp
11855 W 83 Terr
913-888-8005

KS Wichita
Techmark
1305 E Waterman St
316-264-4627

KY Louisville
Louisville Word Processing
1930 Bishop Lane
502-459-0600

LA Metairie
Information Systems Unlimited
2701 Houma Blvd
504-455-7602

MD Baltimore
Vydec Inc
36 S Charles St
301-837-7191

MA Boston
Vydec Inc
One Boston Pl
617-227-5151

MI Southfield
Vydec Inc
3000 Town Ctr
313-358-0430

MI Grand Rapids
Commercial Equip Co
2225 Oak Industrial Dr NE
616-459-1161

MN Bloomington
Dictation Systems Inc
1501 80 St W
612-884-9281

MO St Louis
Vydec Inc
1 Mercantile Ctr
314-621-4271

MO Jefferson City
Modern Business Systems Inc
2211 St Mary's Blvd
314-635-6841

MO Springfield
Modern Business Machines
2530 S. Campbell
417-887-7636

NE Omaha
Modern Business Systems Inc
8627 F St
402-331-4036

NE Lincoln
Modern Business Systems
300 N 27th St
402-474-0316

NJ Morristown
Vydec Inc
55 Madison Ave
201-540-9595

NJ Princeton
Vydec Inc
1101-H State Rd
609-921-3080

NY New York
Vydec Inc
1114 Ave of Americas
212-398-5800

NY Albany
Nichols Business Equip
99 Washington Ave
518-465-8182

NY Syracuse
Nichols Business Equip
Deere Rd
315-463-8594

- NY Woodbury
Vydec Inc
800 Woodbury Rd
516-364-9494
- NY White Plains
Vydec Inc
707 Westchester Ave
212-946-8030
- NY Buffalo
Buffalo Computer Co
3706 Harlem Rd
716-838-4095
- NY Rochester
Magtronic Office Systems
65 College Ave
716-244-2264
- NC Charlotte
Benchmark Systems
5701 Executive Center Dr
704-563-0230
- NC Raleigh
Cavin's Inc
Highway 70
919-781-1220
- NC Greensboro
Cavin's Inc
2302 W Meadowview Rd
919-852-6770
- NC Durham
Cavin's Inc
Forest Hill Shopping Center
919-489-2333
- NC Winston-Salem
Cavin's Inc
3059 Trenwest Dr
916-768-0726
- ND Bismarck
Copying and Visual Products Co
1700 Schafer St
701-223-6033
- ND Fargo
Office Systems Inc
1213 19th Ave N
701-235-1166
- OH Cleveland
Vydec Inc
1300 E 9 St
216-696-6060
- OH Uniontown
Graphic Systems
3458 Massillon Rd
216-896-2346
- OH Cincinnati
Cincinnati Word Processing Inc
801 Linn St
513-481-2711
- OH Columbus
Columbus Word Processing Inc
6600 Busch Blvd
614-885-3645
- OH Youngstown
Graphic Systems Inc
4986 Market St
216-744-2153
- OH Independence
Independence
6155 Rookside Rd
216-447-1033
- OH Uniontown
Graphic Systems
3458 Massillon Rd
216-896-2346
- OK Oklahoma City
BMI Div; Southwest Typewriter Co
Inc
1145 SW 74th St
405-632-1644
- OK Tulsa
Advance Business Systems Inc
Williams Ctr
918-583-3329
- OR Portland
Vydec Inc
620 SW 5 Ave
503-226-1144
- OR Salem
Vydec Inc
495 State St
503-378-1913
- PA Philadelphia
Vydec Inc
1500 Market St
215-299-2264
- PA Harrisburg
Vydec Inc
100 Pine St
717-236-3073
- PA Pittsburgh
Vydec Inc
2 Oliver Plaza
412-281-2070
- SC Columbia
The MacDonald Co
6041 Devine St
803-776-2400
- SC Charleston
The MacDonald Co
1690 Highway 171
803-556-5932
- TN Nashville
Modern Office Methods
200 Great Circle Rd
615-244-1771
- TN Knoxville
Preston Business Machines Co Inc
9041 Executive Pk Dr
615-691-2281
- TN Memphis
Modern Office Methods
One Commerce
901-521-0036
- TX Houston
Vydec Inc
9 Greenway Plaza
713-840-5300
- TX Dallas
Vydec Inc
1200 Ford Rd
214-620-3800
- TX Midland
D S Agency
1002 West Wall
915-684-8646
- TX El Paso
Office Machines Inc
1155 W Moreland
915-779-8459
- TX San Antonio
Vydec Inc
8918 Tesoro Dr
512-824-2314
- TX Lubbock
Dictaphone Sales Agency
1304 Ave "O"
806-762-8361
- UT Salt Lake City
Type-A-Line Business Machine Co
168 E 2 St S
801-521-5310
- VA Rosslyn
Vydec Inc
1400 Key Blvd
703-841-2700
- VA Richmond
Vydec Inc
707 E Main St
804-643-1542
- WA Pasco
Basin Typewriter Co
122 S 4th
509-547-8896
- WA Seattle
Vydec Inc
2620 Rainier Bank Tower
206-682-0915
- WA Olympia
Vydec Inc
711 Capital Way
206-357-3640
- WA Spokane
Business Information Systems Inc
710 Paulsen Bldg
509-838-6870
- WI Milwaukee
Vydec Inc
111 E Wisconsin Ave
414-276-9691

WANG LABORATORIES INC
One Industrial Ave
Lowell, MA 01851
617-459-5000
Contact: Ted Leonsis
■ Products & Services
Computerized branch exchange (CBX)
Minicomputers
Multiplexers, frequency division
DDP systems
Local network systems
Database processors
Add-on main memory
Disc drives, floppy
Discs, floppy
Disc drives, large
Disc packs
Electronic mailboxes
Floppy disc recorders
Tape drives, magnetic
Batch terminals
Data entry terminals
Digital plotters
Graphic display terminals
Programmable terminals
Interactive terminals
Portable data entry terminals
Remote line printers
Remote job entry terminals
Video data terminals (KSR)
Video data terminals (RO)
Word recognition units
Word processors, communicating
Automatic calling units
Computer/communications interfaces
Data security devices, software security
modules
Ribbons and supplies for terminals and
printers
Educational services
Maintenance organizations
Network simulation services
Timesharing/service bureaus

Branch Sales Offices:

- CA Los Angeles
Wang Labs
6151 W Century Blvd
213-645-2872
- IL Park Ridge
Wang Labs
1480 Renaissance Dr
312-298-7990

For further catalog information, turn to
UpDate Service Card, page 201.

MD Rockville
Wang Labs
One Central Plaza
301-770-1903

WESTERN MULTIPLEX CORP
70 Glen Way; Unit 4
Belmont, CA 94002
415-592-8832
Contact: John P Bartelme
■ Products & Services
Microwave/laser systems
Modems, broadband group (to 50 kb/s)
Modems, broadband, super-group
(to 230.4 kb/s)

WESTERN PERIPHERALS INC
14321 Myford Rd
Tustin, CA 92680
714-730-6250
Contact: Richard Sholly
■ Products & Services
Cartridge drives
Cassette drives
Disc drives, large
Tape drives, magnetic
Furniture, cabinets, terminal enclosures
Branch Sales Offices:

AZ Scottsdale
B F A Corp
4426 North Saddlebag Tr
602-994-5400

CA Orange
Gemini Assoc
461 S Glassell
714-997-7745

CA San Diego
Gemini Assoc
4236 Balboa Ave
714-270-0088

CA Los Alamitos
Gemini Assoc
3532 Katella
213-594-9618

CA San Jose
PBC Assoc
1926 Quebec Way
408-377-7001

CO Denver
B F A Corp
12015 E 46th Ave
303-371-2422

FL Orlando
Col-Ins-Co
1313 44 St
305-423-7615

HI Honolulu
Territorial Electronics
1221 Kapiolani
808-521-8724

IL Northbrook
Resource Data Systems
801 Skokie Blvd
312-564-5440

KS Overland Park
Ramsey Associates
6900 N 80th St
913-649-6996

MD Wheaton
Data Systems Marketing
11141 Georgia Av
301-933-0900

MA Acton
R D Stout Assoc
75 Great Rd
617-263-1128

MN Elk River
Prairie Associates
16820 Highway 10
612-441-6190

MO St Louis
Ramsey Associates
1901 Congressional Dr
314-569-1406

OH Dayton
E V Swenson
5250 Far Hills Av
513-435-2772

OR Portland
Pacific Northwest Electr
2035 SW 58th St
503-292-3505

PA Wyndmoor
Rohr Assoc
7902 Louise La
215-836-2200

TX Dallas
SCI Sales Inc
13771 N Central Expwy
214-234-8072

UT Salt Lake City
B F A Corp
395 Lawndale Dr
801-466-6522

WA Bellevue
Pacific Northwest Electr
14264 SE Eastgate Way
206-641-6444

WI Pittsford
J Cameron Associates
One Grove St
716-385-1681

ONTARIO, CANADA
Rexdale Ont
Ahearn & Soper Ltd
31 Enterprise Rd
416-245-4848

AUSTRALIA
Pymble NSW 2073
Digital Electronics Pty Ltd
31 Bridge Street
02-449-4400

BELGIUM
1930 Zaventem
ASAC SA
Leuvensesteenweg 186
02-720-90-38

ENGLAND
Berkshire SL6 8BN
Lambert Computing
52 Moorbridge Rd; Maidenhead
0628-72037-8-9

FRANCE
Asnieres
Metrologie
La Tour d'Asnieres; 4, ave
Laurent-Cely
1-791.44.44

GERMANY, WEST
6455 Erlensee
Media-Data Systems GMBH
Beethovenstrasse 26
06181-77051

GERMANY, WEST
8 Munich 50
Tewidata GMBH
Allacherstrasse 230e
812 60 05

HONG KONG
Causeway Bay
Universal Systems Co
9-15, Yee Wo Street

INDIA
Ahmedabad 380006
Industrial Electronic
Instruments
30 NBK Society Ellis-Bridge
79281

ISRAEL
Tel-Aviv
Minix Computers & Systems Ltd
76 Hachashmonaim St
03-298783

ITALY
10121 Torino
Random SPA
Corso Vittorio Emanuele 76
11-515 415

JAPAN
Chuo-Ku Tokyo 103
Marubun Corporation
8-1 Nihombashi Odenmacho
03-662-8151

MEXICO
Mexico
Control y Proceso Electronico,
SA
Ave Juarez No 14-20
510-12-18

NETHERLANDS
1117 ZL Schiphol East
ABC Data BV
Atoomgebouw 024 POB 7721
020-43 45 94

SOUTH AFRICA
0132 Sunnyside Pretoria
Medusa Trading Pty Ltd
Box 28988

SWEDEN
Solna
Kentele Data AB
Industriv 14
08/83-98-00

Know the product name? Turn to
Products & Services Directory, page 5.
to find out who makes it.

**WESTERN TELE-COMMUNICATIONS
INC**

PO Box 22595; Wellshire Station
Denver, CO 80222
303-366-6400
Contact: Robert L Ottmann-Commercial
■ Products & Services
Specialized carriers
Earth stations
Lightwave (fiber optic) systems

WESTERN TELEMATIC INC

2435 S Anne St
Santa Ana, CA 92704
714-979-0363
Contact: Michael A Teague
■ Products & Services
Line sharing units
Discs, floppy
Floppy disc recorders

Branch Sales Offices:

ENGLAND
Chesham Bucks
Zygal Dynamics Ltd
13 High St

SWITZERLAND
Zurich
Erni & Co
CH-8306 Bruttisellen

**WESTERN UNION INTERNATIONAL,
INC**

One WUI Plaza
New York, NY 10004
212-363-6400
Advertising page 17
Contact: E C Clark

■ Products & Services
 Facsimile-service carriers
 International record carriers
 Message (including telegraph) carriers
 Packet-switching carriers
 Satellite carriers
 Specialized carriers

Branch Sales Offices:

- CA San Francisco
 Western Union Int'l
 111 Pine St
 415-986-3971
- CA Los Angeles
 Western Union Int'l
 One Bunker Hill Bldg
 213-629-4398
- CT Norwalk
 Western Union Int'l
 11 Belden Ave
 203-847-5839
- CT Stamford
 Western Union Int'l
 111 Prospect St
 203-348-2147
- DC Washington
 Western Union Int'l
 2100 M St NW
 202-293-7810
- FL Miami
 Western Union Int'l
 25 Southeast Second Ave
 305-373-3106
- GA Atlanta
 Western Union Int'l
 1100 Spring St
 404-873-2394
- HI Honolulu
 Western Union Int'l
 333 Queen St
 808-531-2781
- IL Hinsdale
 Western Union Int'l
 201 E. Odgen
 312-986-0250
- IL Chicago
 Western Union Int'l
 165 North Canal St
 312-876-0640
- LA New Orleans
 Western Union Int'l
 2 Canal St
 504-586-0041
- MD Baltimore
 Western Union Int'l
 Chamber of Commerce Bldg
 301-539-5750
- MA Boston
 Western Union Int'l
 50 Stamford St
 617-723-7085
- MI Detroit
 Western Union Int'l
 645 Griswold St
 313-961-4513
- NJ Middlesex
 Western Union Int'l
 480 Lincoln Blvd
 201-560-0707
- NJ Newark
 Western Union Int'l
 744 Broad St
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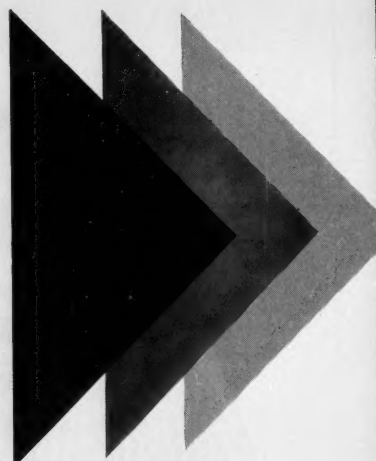
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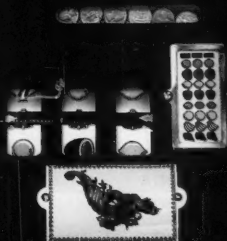
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Each of these new modems has the same surface area as your telephone handset, and fits directly under that instrument. And, since each is FCC certified for direct connection to the DDD network, hook-up is accomplished in seconds, via three snap-in connectors.

Our first entry in the line-powered sweepstakes was the 103 LP, a \$195 model introduced in January, 1980. It's a 0-300 bps, asynchronous, full-duplex originate-only unit. It includes both RS-232C and current loop (TTY) interfaces.



Next was a 202 LP, announced in May and providing 0-1200 bps, asynchronous, half-duplex communication over the DDD network. It's priced at \$295, complete with an integral RS-232C interface.

Things to come include additional line-powered modems scheduled for August and December of 1980. Others are expected in early '81.

To find out what's happening in line-powered modems, contact the only people who are making it happen. Call your UDS Regional Office or contact Universal Data Systems, 5000 Bradford Drive, Huntsville, AL 35805. Phone 205/837-8100.



"Confidence in Communications"

Universal Data Systems

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